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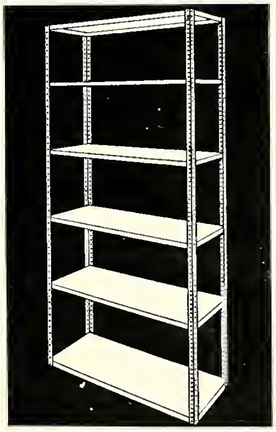

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Official organ of the Pharmaceutical Society of Ireland and of the Pharmaceutical Society of Northern Ireland
Volume 187 March 18th 1967 No. 4544

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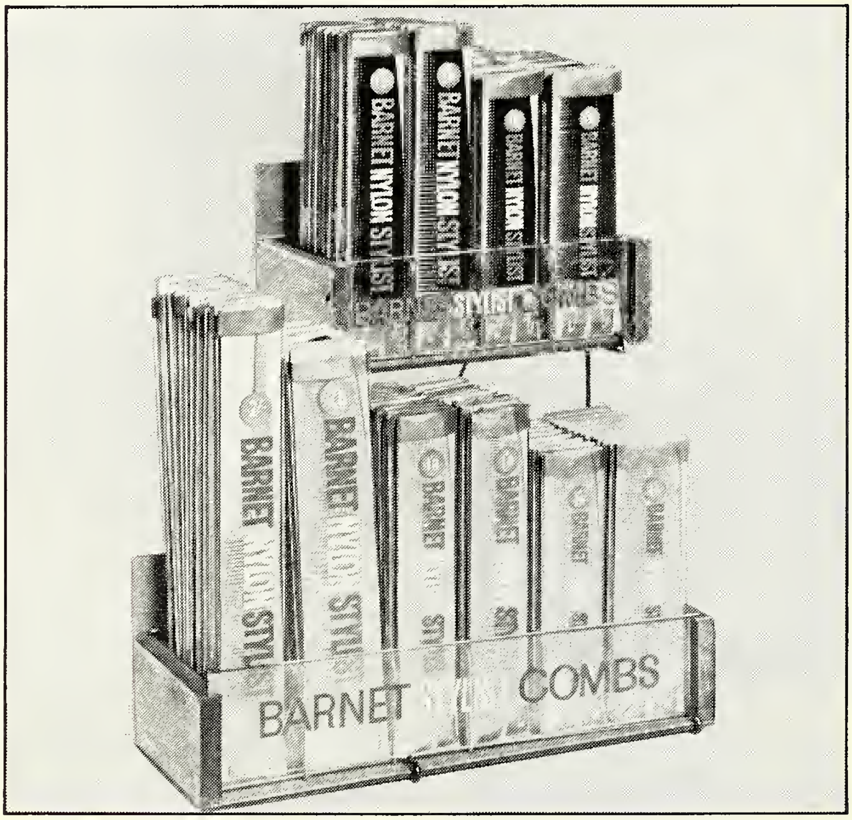

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Volume 187 MARCH 18, 1967 No. 4544

Thalidomide Prosecutions

CRIMINAL CHARGES AGAINST GERMANS

CRIMINAL charges were laid on March 14 against nine executives of Chemie Gruenenthal, G.m.b.H., Stolberg, Germany, manufacturers of thalidomide.

The executives were accused of causing bodily harm and death deliberately and through negligence, as well as violating German drug laws. The trial is expected to last a year and to open some time in 1968, following a six-year investigation ordered after the drug was linked with deformities in newly born children. Details of the charges were given at a Press conference at Aachen, when the public prosecutor (Dr. Heinrich Gierlich) said that about 400 people whose families had suffered from the effects of thalidomide had applied to him as co-plaintiffs. The indictment names twenty-six experts and 352 witnesses who will testify at the trial. Public prosecutor Dr. Josef Havertz, who headed a special investigation team, said that the probe had been opened on the basis of about 3,000 complaints. The accused include Dr. Heinrich Nueckter (scientific director), and Messrs. Hermann Wirtz (one of the proprietors), Jakob Chauvistre (general manager), Hermann Josef Leufgens (former sales director), Klaus Winandi (company secretary and former production manager), Dr. Gotthold Erich Werner (former head of the medical scientific department), Dr. Guenther Sievers (scientific associate and former supervisor); Dr. Heinz Wolfgang Kelling (former head of the scientific external service) and Dr. Hans Werner von Schrade-Beielstein (company secretary). The thalidomide preparation was Contergan. At the Press conference it was said that at least 5,000 children had been born in West Germany with deformities after their mothers had taken Contergan during pregnancy. The number of adults who had suffered nerve damage was also about 5,000. About 1,000 cases were known abroad, mainly in Sweden and Britain, but more probably existed. Dr. Gierlich said the first cases of damage to the nervous system had been established during the clinical tests of the drug before it was put on the market. That was the main reason for the charges of deliberate bodily injury. More than seventy British families have been granted limited legal aid to take civil action in the High Court after the birth of deformed babies. The first case will be set down later this month and has been provisionally fixed for hearing in November. It will be a test case and is being brought by Mr. E. Satherley, Isle of Wight, against Distillers Co. (Biochemicals), Ltd.

Pharmacy Technicians

TRAINING STANDARD SOUGHT

RELEASE of pharmacy from the provisions of the Industrial Training Act is being sought by the Pharmaceutical Society. Mr. J. P. Kerr (chairman, Practice Committee) said in answer to a question at a regional conference of the Society in Birmingham on March 11, that because of the number of differing training schemes that were being established—in hospital board regions, for example—the Society had told the Ministry of Health that it wanted one standard of training for pharmacy technicians and a unified scheme that would allow the technician to serve in either hospital or general practice. The Ministry, said Mr. Kerr, was taking the matter up with the Ministry of Labour.

[A full report of the conference will be given in a forthcoming issue—Editor.]

Heroin Addiction

GUIDANCE TO HOSPITALS

THE Minister of Health (Mr. Kenneth Robinson) has issued a memorandum to hospital authorities on the treatment of heroin addiction. The memorandum outlines action already taken, or proposed, on the recommendations in the second report of the Inter-Departmental Committee on Drug Addiction (the "Brain Report"), and describes the treatment facilities which hospitals are asked to provide. Regional hospital boards responsible for London and the Home Counties and boards of governors of London teaching hospitals with psychiatric departments are asked to introduce out-patient services for those heroin addicts who are not at present willing to accept in-patient treatment for the withdrawal of heroin, but who need medical supervision as out-patients. They are asked to introduce the services immediately on a small scale, and to make plans to expand them at short notice to meet any increased demand. That might follow, for example, on the enactment of the proposed legislation confining to doctors at treatment centres the right to prescribe or supply heroin and cocaine for addicts. Boards are also asked to make similar plans to expand in-patient services for those heroin addicts who are willing to accept withdrawal treatment. Hospital authorities in other parts of the country are asked to take similar action in those areas where it seems warranted by the number of known addicts. In other areas, where demand is expected to be small, or cannot be estimated, they are asked to

KNIGHTED: Sir Michael Perrin, C.B.E., at the investiture at Buckingham Palace on March 7 at which he received the knighthood conferred upon him in the New Year's honours. Sir Michael is chairman of the Wellcome Foundation, Ltd., and chairman (treasurer) of St. Bartholomew's Hospital. With him are Lady Perrin and their son Mr. Charles Perrin.

plan treatment, initially, in selected psychiatric wards or departments; no large towns should be without wards or departments selected for that purpose. An appendix to the memorandum shows the distribution by Regional Hospital Board area of the 659 heroin addicts in England and Wales known to the Home Office in January 1967. Of that total, 467 were within the London postal district and another 100 in the Home Counties. The largest known concentration outside London and the Home Counties was in Birmingham, where there were forty seven known heroin addicts.

Conference Papers

PROCEDURE AND SUBMISSION DATE

THE procedure for submitting science papers at the British Pharmaceutical Conference meeting at Blackpool, September 11-18, is similar to that followed at previous meetings. The Conference Executive is offering authors the alternative of submitting science papers either as the full papers (of a suggested maximum of 4,000 words) or as short communications (not exceeding 1,000 words) which might take the form of (a) an advance report of an investigation which it was intended to publish in full at a later date, or (b) an interim report of an investigation which was not yet complete. Completed manuscripts should be submitted to the general secretary, 17 Bloomsbury Square, London, W.C.1, as soon as possible, but in any case all manuscripts must be received not later than May 1. Three copies (including diagrams, figures and tables) are required. Only one set of diagrams or figures need be suitable for blockmaking. It is hoped to circulate preprints in advance of the meeting, and authors should therefore prepare for reading at the science session a statement of about 600 words drawing attention to points of interest or significance in the paper, and, where appropriate, the reasons that prompted the research. Papers accepted for the Conference are to be published in the *Journal of Pharmacy and Pharmacology* and a limited number of reprints will be supplied. In preparing papers, authors are requested to follow the instructions contained in "Notice to Contributors" a copy of which may be obtained from the conference office. Projection facilities are being provided but prior notice for their use is required.

New-town Hospital

WORK BEGINS ON STEVENAGE PROJECT

DETAILED plans have been announced for a new Lister Hospital at Stevenage, Herts. Its first stage, on which work has just begun, will provide 535 acute beds in 1971, together with a psychiatric unit and staff residential accommodation. Total cost of the completed and equipped hospital is expected to be about £6·5 million. The pharmaceutical department, which will occupy a working area of 7,089 sq. ft., will be on the same level as the main entrance and out-patient waiting area. At one end of the dispensary will be a prescription service counter for outpatients, and at the other a dispatch area for supplies to wards and other departments. Planned accommodation includes a sterile-products laboratory, bulk-preparation and bottle-washing rooms, poisons store and offices and staff facilities. The main pharmaceutical stores are immediately below the pharmacy, with an internal staircase and goods hoist for communication and transfers.

Medicines Sales

MINISTER OPPOSED TO MONOPOLY

THE Minister of Health, speaking at the annual meeting of the West Sussex Local Pharmaceutical Committee on March 8, said he could see no case for pharmacists having a monopoly of the distribtuion of medicines since any advice the pharmacist might give could be undone immediately the purchaser got home. He was replying to a question by Mr. E. Ibbotson (a member of the Committee) after addressing a meeting to which members of the medical, dental and ophthalmic professions had been invited.

Decimal Coinage

FLORIN ENTERS THE DEBATE

THE Confederation of British Industry normally associated with favouring 10s. as the major unit has now come out in favour of the pound divided into ten florins. A statement issued recently by C.B.I. adds that each florin should also be divided into 100 "mils," thus two mils would provide the equivalent of a halfpenny (a unit which the C.B.I. says, is needed). There would be no need to mint a one mil coin, buts its existence would be useful in wage negotiations. The system would retain the pound for international purposes.

Hospital Efficiency

NEED FOR MORE RESEARCH

EFFICIENCY in the hospital service is the subject of the latest paper published (price 2s. 6d.) by the Office of Health Economics, 162 Regent Street, London, W.1. It says that further efficiency studies should be carried out and that "medical care" trials should be conducted along the lines of existing chemical trials. Expenditure on National Health Service hospitals is shown to have risen from £235 million in 1949 to £794 million in 1965, an average annual increase of 8 per cent. Cost this year is expected to exceed £900 million.

Resale Prices

MORE CLASSES "FREED"

RESALE price maintenance on a wide variety of consumer goods including electric hairdressing appliances and sanitary towels and related classes of goods was made illegal by the Restrictive Practices Court on March 10. The court also made orders under the Resale Prices Act, 1964 declaring it refused to exempt the following classes of goods from the general ban on resale price maintenance:—Non medicated cotton wool, dry cleaning fluid, snuff, harness and belts in baby carriages.

POISON LIST AND RULES

"Second thoughts" on ephedrine and chloroform

THE Home Office has announced that Statutory instruments giving effect to recommendations by the Poisons Board are being prepared. The recent proposals in respect of ephedrine and chloroform (see *C. & D.*, October 8, 1966, p. 344) have been amended following representations by pharmacists and manufacturers. The details are as follows:—

(a) *Ephedrine*:

(i) the exemption in respect of ephedrine in the entry under the heading "Beta - aminopropylbenzene . . ." in Part I of the Poisons List will be amended to read "except ephedrine and its optical isomers when contained in liquid preparations or topical preparations, or in solid preparations containing less than 10 per cent. of ephedrine or its optical isomers . . ."

(ii) an entry in the following form will be made in the First Schedule to the Poisons Rules — "Ephedrine; its optical isomers; except when contained in liquid preparations or topical preparations, or in solid preparations containing less than 10 per cent of ephedrine or its optical isomers except when in an inert diluent."

(iii) the exemption in respect of ephedrine in the entry under the heading "Beta - aminopropylbenzene . . ." in Part B of the Fourth Schedule to the Poisons Rules will be amended to read "except ephedrine or its optical isomers . . ."

(b) *Chloroform*:

(i) chloroform will be included in the First Schedule to the Poisons Rules with an exception for substances containing not more than 5 per cent. of chloroform or in the form of preparations not intended for the internal treatment of human ailments.

(ii) the exemption in the Third Schedule will be revised to exclude from control (a) solid preparations and (b) other preparations containing less than 1 per cent. of chloroform.

(c) *Acetorphine and etorphine and their salts, and their esters and ethers and their salts*, will be included in Part I of the Poisons List and in the First Schedule to the Poisons Rules.

(d) *Verapamil and its salts* will be included in Part I of the Poisons List and in Part B of the Fourth Schedule to the Poisons Rules.

(e) *Hydroxycarbamide* (*hydroxyurea*) will be included in Part I of the Poisons List and in the First Schedule and Part A of the Fourth Schedule to the Poisons Rules.

(f) A rule will be made further restricting the sale of *zinc phosphide* so that it will not be available to householders and can be purchased only by operators trained in its use and persons conducting a trade or business whose nature requires them to control rats and mice on their agricultural, horticultural, industrial or commercial premises.

IRISH BREVITIES

THE REPUBLIC

The Irish Chemists' Golfing Society is to hold outings at Baltray on April 19 and at Woodbrook on May 4.

Owing to pressure of business, Mr. Stanley Savage (managing director, Hayes, Conyngham & Robinson, Ltd.) has resigned from the committee of the Irish Drug Association and has been replaced by a co-director, Mr. A. B. Smith.

NEWS IN BRIEF

British Summer Time begins at 2 a.m. on Sunday, March 19. Clocks should be put forward by one hour during the night of March 18/19.

The third edition has been published of the Medical Research Councils' memorandum No. 23—Nomenclature of Fungi Pathogenic to Man and Animals (H. M. Stationery Office, price 3s.).

The Ministry of Agriculture Fisheries and Food has revised two more advisory leaflets. No. 366 Ants Indoors and No. 38 Mosaic and Streak of Tomato (H. M. Stationery Office, price fourpence each).

The National Chamber of Trade is urging its members to advise their Members of Parliament to support the 10s. unit when the Decimal Currency Bill is debated in the Houses of Parliament.

The Union of Shop, Distributive and Allied Workers has elected Mr. R. B. Seabrook *President* for the coming year. He takes office immediately following the Union's annual delegate meeting, which is being held at Blackpool, Lancs, April 30 to May 2.

Soil samples from unexplored regions of Antarctica, brought back to the United States by an American mountaineering expedition, are being screened for antibiotic-producing moulds at Cyanamid International's Lederle Laboratories, Pearl River, New York.

Winning and commended designs in the 1966 Royal Society of Arts industrial art bursaries competition will be on show at the Society's headquarters, John Adam Street, London, W.C.2, May 9-26 (weekdays only). In the packaging sections, the designs are for a double toilet roll pack and a deodorant for men pack.

Rare books from the library of the Society of Herbalists were sold at Sotheby's London sale room on March 13. They included a combined volume of the first edition, 1526, of the first illustrated herbal in English, "The Grete Herball", with "The Distyllacyon of the Waters" (1527) and "The Vertuous Handy Warke of Surgeri" (1525).

SPORT

Golf

South London and Surrey Pharmacists' Golfing Society. A Stableford competition was played at Royal Blackheath golf club on March 8. *Results*: 1, G. Howell, Banstead Downs, (15), 41 (member); 2, Dr. Phillips, Royal Blackheath, (10), 43 (visitor); 3, K. Bolton, Mid-Kent, (16), 39 (visitor). *Best score on first nine holes*, M. Jeffries, 19. *Best score on last nine holes*, V. Powell, 22.

TOPICAL REFLECTIONS

By Xrayser

Man-power

The required strength of man-power in pharmacy is extremely difficult to estimate. It is possible to ascertain, by a simple count, how many pharmacists are on the register and, from year to year, to establish by how much and in what direction that total fluctuates. Dr. Parkinson (deputy secretary, Pharmaceutical Society) has devoted much attention to the interpretation of the figures produced by the survey of the Society's membership carried out in 1966. From the survey it is possible to make comparison with the situation three years earlier. In an address to a meeting held in London recently, Dr. Parkinson said that a prediction made by the Economist Intelligence Unit, on the basis of the 1962 figures, to the effect that numbers on the register might fall by 1,000 within fifteen years, appeared in the light of the later survey to have been an underestimate. The subject is a highly complex one, far beyond the comprehension of the average member. It may seem that a reduction in strength, by certain standards, is not a matter for undue concern, for there seems little doubt that considerable pharmaceutical skill is being expended in non-pharmaceutical directions, and that the country's pharmceutical needs as such could be met from a smaller number if the resources were deployed to meet needs. The fact that, as Mr. G. Raine said, there are grave shortages in the hospital service has nothing to do with the numerical strength of pharmacists on the register. Rather it is a matter of conditions of employment, and an overall position of full employment in general, a factor that contributes to the shortage of locums available for general practice, as mentioned by Mr. J. Wright (secretary, National Pharmaceutical Union) and the inability—referred to by one or two married women pharmacists—to obtain domestic help to permit of their return to pharmacy. The problem of holiday relief will remain so long as there are so many businesses having only one pharmacist.

Education and Recruitment

I find matter for thought in Dr. Parkinson's references to recruitment and to education. Recruitment, said Dr. Parkinson, was much in the mind of the Council. There was a high standard, three A levels being required. Up to the present the schools of pharmacy had been filled, but the situation might have to be considered in the future for, in recruiting students to schools of pharmacy, there was now fierce competition with other disciplines. I am not quite sure of the implications of that statement, but it suggests that it may be expedient, in the circumstances, to lower the entrance standard and so widen the field. I confess that, while I can follow the reasoning, I am not sure that I approve of the expediency. We have been led to believe that the present high standard of pharmaceutical education demands a high standard of education at entrance. Does that mean that other disciplines are relaxing entrance standards so as to attract entrants? Or does it mean that, on equal terms, pharmacy is not found sufficiently attractive to those who have a wide choice? On grounds of morality alone I can scarcely conceive that the first proposition is correct. On the other hand, if the thought is to lower entrance standards to pharmacy in order to gain recruits, has the current level of entrance been higher than necessary? If so, then have we been quite honest? And if it is not too high, then is it fair, merely in order to maintain numbers, to subject "substandard" recruits to an advanced course of study that will entail struggling on for four years with the prospect of failure at some stage? The questions come to mind. I cannot answer them.

Difficult Question

Customer: "Can I have a supply of . . . . ?" The preparation named was included in the fourth schedule, and inquiry elicited the information that there was no prescription. It was necessary to inform the customer that if he obtained a prescription he could have the drug. "Can you direct me then to a chemist who supplies it without a prescription?" A very good question, as they say.

EFFICIENCY IN HOSPITALS

Report calls for more work-study research

WHILE efforts so far made by the Ministry of Health in increasing the management efficiency of hospitals are welcome, the need for further expansion of research to that end has taken on "added urgency,' states a report (price 2s. 6d.) published on March 9 by the Office of Health Economics, 162 Regent Street, London, W.1. The report points out that the annual expenditure on National Health Service hospitals has risen from £235 million in 1949 to £794 million in 1965, and is expected to exceed £900 million (£50 per household) in the current year. Yet since 1963-64, when the Government first allocated funds specifically to hospital efficiency studies, expenditure on that type of research has risen from £18,000 to an estimated £250,000 in 1966-67 which amounts to only 0.03 per cent. of the total hospital expenditure, though additional Government money is also spent on related research projects.

The report draws attention to the large variations in costs and performance in different hospitals. The average cost per patient per week in medium-sized acute hospitals in 1965-66, ranged from £29 to over £68. Medical salaries per patient week ranged from £2 1s. 9d. to £5 16s. 4d. "Not only must efficiency studies pin-point variations in performance of similar organisations by the use of statistics, but they must also play a more positive rôle in evaluating the success or failure of different methods of medical care and organisation and eventually attempt to define acceptable levels. To do this, careful and widely-based experiment is necessary; medical care trials should be conducted along lines similar to existing clinical trials." The therapeutic progress that can be anticipated in the forseeable future is unlikely dramatically to reduce the need for hospital beds as it had been by the control of tuberculosis.

The report calls for more extensive training of professional hospital administrators and concludes that, whilst management efficiency studies are unlikely to reduce the cost of the hospital service, the resulting savings should be used significantly to improve the quality of medical care.

ADVERTISEMENTS BY POST TO DOCTORS

How they are regarded by (a) doctors and (b) manufacturers

WHAT doctors think of direct mail advertising was probed in a survey carried out in 1966 on behalf of the B.I.A. Direct Mail, Ltd., group of companies by Marplan, Ltd., 2 Cursitor Street, Chancery Lane, London, E.C.4. Purpose of the survey, which was entirely postal, was to assess the value which general medical practitioners attached to the medium, to find out how they thought it compared with other advertising media, and which types of advertising material they preferred. The sample comprised 1,501 doctors (selected on a geographical population-density basis). 707 (47 per cent. of doctors returned completed questionnaires. Of those who replied 73 per cent. said they found direct mail advertising material valuable to them in their practice; they found cards and folders the most useful type of material, followed by samples and reports/brochures. The percentage of respondents who said they looked at all their advertising material was 68 per cent.; and 92 per cent. of all doctors questioned said they read at least some of it. They placed direct mail second to medical representatives as the most valuable medium for learning about new products, but thought direct mail could usefully provide information on warnings and contraindications; indications; modes of action; forms of supply; trade name and product benefits.

Most informants seemed to think that the drug houses took into account the products the recipients were likely to use when choosing the type of advertising material to send. Over three-quarters answered "No" to a question. Just over half of the total sample said that when offered the choice, they preferred a short summary of product information designed to be thrown away, rather than a detailed piece to be kept for future reference.

It appeared from the sampling that the average practitioners surgery received between two and four calls a week from medical representatives. By far the greatest proportions said they saw all the representatives who called. A few saw them by appointment only.

A Marketing Manager's View

On February 16 Mr. Bob Richards (marketing director, Riker Laboratories) gave an address to the British Direct Mail Advertising Association in London in which he gave information about the extent and views about the prospects of direct mail to doctors.

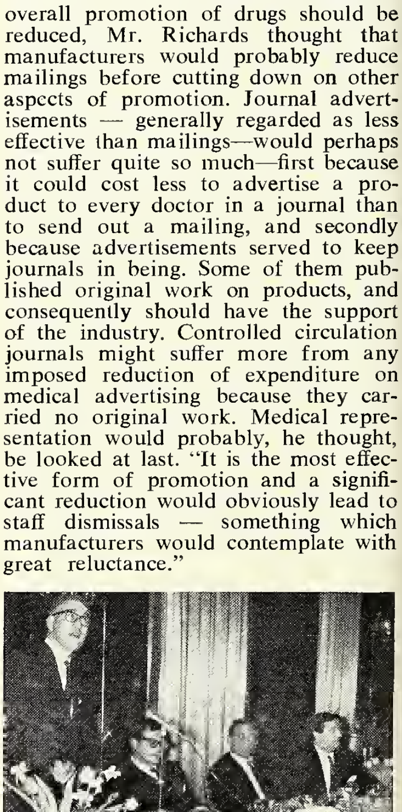
It had been estimated, he said (*B.M.J.*, 1966. p. 542) that practitioners in Britain received 1,500 tons of mailed literature a year, at a cost in postage of around £½ million. In 1965, 1,969 pieces of literature of all kinds (1,783 items of mailing literature) had been pushed through doctors' letter boxes—a daily average of rather less than seven items. Even the Ministry of Health carried out its own mailings in the hope of influencing what doctors prescribe. It sent out the *Prescribers Journal* monthly, and individual items occasionally.

Most doctors obviously accepted direct mail. Those who complained about it objected to its cost (if unnecessarily glossy), amount, and sometimes its presentation and style. Manufacturers had not been guiltless, often causing lurid pictures to appear on breakfast tables, and drawing insufficient attention to side effects and contraindications. However, if all criticisms were accepted the promotional value would decline. His daily seven pieces of literature could involve a doctor in quite a lot of envelope opening especially if he saved it all up to do once a week. Nevertheless, 24 per cent. of doctors fully answering a questionnaire sent out by the Association of British Pharmaceutical Industry had admitted that they kept up to date from mailings.

Direct mail was used by manufacturers because doctors were a relatively small, easily identified group of people and because the lay Press and television advertising was barred. The A.B.P.I. had estimated the cost of direct mail at £2 million per year. Nobody expected every doctor to read every item, and a mailing of only two leaflets, if read by the right 5 per cent. of doctors still cost less per doctor contact than a visit by a medical representative.

Ministry's Position

The Ministry of Health regarded itself as having to pay for the mailings since it was virtually the pharmaceutical industry's only customer. The Ministry's assumption was that, if mailings were not carried out then manufacturers' profits, which had to support the cost of them, could be reduced and the nation's drug bill lowered. If the Sainsbury Committee were to make recommendations that overall promotion of drugs should be reduced, Mr. Richards thought that manufacturers would probably reduce mailings before cutting down on other aspects of promotion. Journal advertisements — generally regarded as less effective than mailings—would perhaps not suffer quite so much—first because it could cost less to advertise a product to every doctor in a journal than to send out a mailing, and secondly because advertisements served to keep journals in being. Some of them published original work on products, and consequently should have the support of the industry. Controlled circulation journals might suffer more from any imposed reduction of expenditure on medical advertising because they carried no original work. Medical representation would probably, he thought, be looked at last. "It is the most effective form of promotion and a significant reduction would obviously lead to staff dismissals — something which manufacturers would contemplate with great reluctance."



Mr. Richards addressing the Direct Mail Advertising Association. At right is Mr. N. Henderson (A.B.P.I.).

Institute of Pharmacy Management

VARIETY OF SUBJECTS DISCUSSED AT ANNUAL CONFERENCE

THE third annual conference of the Institute of Pharmacy Management held at Matlock, Derbyshire, March 12-13 was attended by about eighty members and friends, including a number from Scotland and, for the first time, from Northern Ireland. The Institution's president (Professor J. M. Rowson), received the delegates at the formal reception, and presided at the banquet. The conference was chaired by Mr. B. J. Thomas, two papers being presented on the Sunday afternoon and two more on Monday morning. The Sunday session began with a paper written by Messrs. B. M. Backhouse and T. G. Booth, Bradford, and read by Mr. Backhouse, on "Analysis of Financial Aspects of General Practice Pharmacy." It was followed by Mr. D. H. Maddock, Cardiff, on "Efficient Retailing in Pharmacy." The following morning, Mr. J. B. Thompson, Bournemouth, read a paper on "Stock Control and Stock Investment" while Mr. W. F. Scott, Newcastle upon Tyne, gave the final paper on the subject "The Unqualified Helper in Pharmacy."

MR. BACKHOUSE began by stressing the importance of efficient and economic planning now that a shrinking of retail profit margin became manifest daily in retail pharmaceutical business. That efficiency, he said, could only be achieved by adopting continually an intelligent, scientific and analytical approach to the conditions pertaining in the particular pharmacy. Constant reviews of both the cash turnover and of the dispensing aspects of the business must be made. A constant watch had to be kept on variable factors such as the prescribing habits of local doctors, re-housing and re-development. All comparisons were potentially invidious and many factors might be implicated in any particular comparison, nevertheless the value of comparative analysis was to indicate trends and to stimulate investigations of deviations from means. Amongst many figures and ratios which could be used for comparative studies were turnover, gross profit, expense ratios, rate of stock turn, and profit to capital employed ratio. One of the main dangers of comparisons in terms of turnover, one year with another, was the changes in price levels of goods such that an increase in turnover might reflect a decrease in trading if the retail prices of the goods sold had substantially increased. It was necessary always to bear in mind the percentage increase in turnover in comparison with the increase in the Index of Retail Prices.

Estimating Trends

To estimate trends in trading a moving annual total might be used. In that method, which eradicated seasonal variations, the turnover figure for each preceding twelve months was calculated at the end of each month by adding the month's sales figures to the previous twelve months' total and then deducting the first month's figures.

Objective comparisons of counter trade could be made with national averages and increases or decreases seen in proper perspective. National averages were collated by the Board of Trade and selected extracts were given in THE CHEMIST AND DRUGGIST. If those figures were collected regularly satisfactory comparative tables and graphs of performance could readily be made. In that way, a particularly bad period turnover-wise in an individual pharmacy might be shown to be a national trade depression and not to be worried over unduly.

Series of figures that could be used for comparative purposes, including N.H.S. receipts as well as counter sales, were those of the Nielsen Report and Nielsen Drug Index, abridged forms of which were also published regularly in THE CHEMIST AND DRUGGIST, and also those of the Chemists' Trade Barometer published three-monthly in *Pharmacy Management*.

Prescription Data

The most up-to-date N.H.S. prescription data was published approximately three months in arrears on form P.D.1 issued monthly by the Joint Pricing Committee for England. Information could be sought from the secretary of the local Pharmaceutical Committee. Comparisons of gross profit percentages progressively over the years in any particular pharmacy were sometimes indicative of satisfactory management or otherwise. It was to be expected that the percentage would show falls in recent and future years as the reduction in the gross profit on N.H.S. dispensing (due to the increase in average ingredient costs and to the reduction in oncost) and the full impact of abolition of resale price maintenance became apparent. It would be imperative to asccrtain as soon as possible the ultimate mean floor-level for the future gross percentage. It was also important to review continually the expenses in comparison with previous years and, more important, to consider the ratio of expenses to turnover. Salaries and wages were the largest single item of expense to most retailers and should be expressed as a percentage ratio of turnover and comparisons made annually. The ratio was variable according to the type of establishment. As a rule-of-thumb, the authors suggested that the total staff wages and salaries expenses were approximately 60 per cent. of the gross profit earnings. The wage cost percentage of turnover was a sensitive guide and should be watched carefully. It would probably support the view that the cheapest staff were not invariably the most economical staff to employ.

Rate of stock turn was usually expressed as the ratio of cost of goods sold, which was divided by the average of the commencing and finishing stock-at-cost.

The profit to capital employed ratio was a most important measure of management efficiency. The figures used for "profit" might be profits before or after tax. The capital employed figure was variable according to type of business and to interpretation. For a small independent pharmacist the "capital employed" was the sum owed to him by the business, being the surplus of assets realisable less liabilities.

The authors concluded by saying that it did not matter what methods of assessment were used provided the methods remained constant over the time and that like was compared with like. The interpretation of the facts was a matter for the individual and often only he could draw the necessary conclusions in the light of local knowledge. Satisfactory action taken on the conclusions might be the determining factor in the economic success of the business which, in turn, might often prove of great value to the health and social needs of the local community and therefore to the public image and general credit of pharmacy.

MISS M. A. BURR, Nottingham, inquired what the speaker thought of representatives checking over the stock but MR. BACKHOUSE said representatives were not allowed in his stockroom. In reply to another question he said a supermarket had opened near him. He did not reduce his prices to compete with their special offers but saw to it that such goods were not displayed during the period.

MR. MADDOCK, in his address on efficient retailing in pharmacy, said that all pharmacists, and particularly those in general practice, had the chance to be recognised as professional men today. Not only was that so within the narrow field of dealing in medicines ("an activity to which some of our colleagues would restrict us"), but also as professional businessmen. That did not mean two sets of standards. Rather, what was demanded was that "pure" pharmacy and the non-pharmaceutical activities, so often associated with it in general practice, should both be lifted to a higher plane than was normally reached today. The pharmacist who did not like selling should "get into another niche" before his policy of "super professionalism" led to bankruptcy.

Dominance of the "Small Man"

Distribution had been and still was, almost entirely dominated by the smaller man. Even today's multiples were composed of a mass of relatively small units. That non-pharmaceutical sales were essential to today's pharmacy had been substantiated by many comments. The sole reason why "a man cannot live on pharmacy alone" was due to a failure on the part of the Minister of Health to place a rational value on a pharmacist's services. "It is surely one of the enigmas of our time, that the Pharmaceutical Society, on the one hand, manages to remain aloof from discussions concerning our professional fees and yet sets out to curtail the trading aspects of our business."

(*To be concluded*)

IN PARLIAMENT

By a Member of the Press Gallery, House of Commons

MEMBERS in both Houses asked questions about the unit to be adopted when decimal currency came to be introduced. The Earl of Dundee and Baroness Burton raised the matter in the House of Lords on March 7, when Baroness Burton suggested that, had the Halsbury Committee been sitting today, "they might have felt that times had changed" and when Baroness Elliot pointed out that the Decimal Currency Action Committee now had sixteen organisations supporting it, among them retail, distributive, manufacturing, commercial, and transport interests. The Earl of Longford replied that Governments had been considering the matter for over three years, and there came a time when a decision had to be reached. Lord Redmayne suggested there had been no public urgency about which unit should be adopted. Members of the public had regarded it as being a long way off, but now the subject had become topical, public opinion was aroused, and the Government should pay attention to it. Earl Longford replied later that the Halsbury Committee had reported in 1963, and there had been plenty of time for decision and compromise before 1967. In the House of Commons. Sir John A. Langford-Holt asked the Chancellor of the Exchequer whether he was aware that recent research had shown that 90 per cent. of all goods sold retail under £10 were valued in terms of shillings and pence and that the use of the £ unit for decimal currency would adapt less conveniently than if the 10s. unit were adopted. Mr. James Callaghan (Chancellor of the Exchequer) in a written reply on March 7, said that that argument had been given due weight both by the Halsbury Committee and the Government. Earlier in the day Mr. Callaghan had told Mr. Christopher J. S. Rowland that, since December 12, 1966, he had received 355 "representations on decimalisation from members of the public and trade organisations." Forty-four had been in favour of the £1 and 153 in favour of 10s. unit.

Hearing Aids

Mr. Kenneth Robinson (Minister of Health) made a statement on March 8, concerning proposed improvements in the range of hearing aids available under the National Health Service. It had been decided that an improved body-worn Medresco hearing aid with a substantially better performance than the present aids should be designed and put into production, though it would not be possible to begin issuing it until about three years hence.

Committee on Drug Addiction

Miss Alice Bacon (Minister of State, Home Department) told Mr. Stanley Orme on March 9 that the Advisory Committee on Drug Addiction had begun its consideration of the general question of the need for a publicity campaign to help to stamp out the abuse of drugs. The study had begun during the second meeting of the committee on March 2. Mr. Orme wanted the Minister to consider consulting the medical profession, so that the more harmful might be differentiated from the less harmful drugs. Miss Bacon said the Minister of Health and Home Secretary were in constant communication, and they had been given to understand by the Committee that it was treating publicity as a matter of urgency. Later she said that in 1966 1,153 convictions had been made for unlawful possession under the Drugs (Prevention of Misuse) Act, 1964, and in the same year there had been 1,100 convictions for possession under the Dangerous Drugs Act, 1965.

Health Education

Mr. Neil Carmichael asked the Secretary of State for Scotland what arrangements were being made to implement the recommendation in the Cohen report that a new and stronger central organisation for health education should be established. Mr. William Ross (Secretary of State), in a written answer on March 10, said he proposed to establish a new health education unit within the Scottish Office to be responsible for stimulating health education in Scotland, for developing the most effective methods and techniques, and for evaluating the results of particular campaigns or programmes. The new unit would work in close association with the Scottish Council for Health Education, which had agreed in principle that, in future, its main rôle would be to provide training for local-authority staffs engaged in health education. He hoped that the arrangements, planned to operate later this year, would give a new impetus to health education in Scotland and would be of assistance to local authorities in carrying out their responsibilities.

Hospital Service Costs

Mr. Robinson told Mr. N. Fisher that the cost of running the National Health Service hospitals in England and Wales during 1966-67 was estimated at £652 millions, against £600 millions in 1965-66 and £544 millions in 1964-65.

"SECOND RATE DOCTOR"

Chemist criticised by coroner

THE Walsall, Staffs, coroner (Mr. A. H. Gregory) at an inquest on March 7 criticised a chemist for "acting as a sort of second rate doctor." The inquest was on a boy aged two years and five months who had been in the full time care of Mrs. I. G. Palmer for some weeks before his death. During formal evidence Mrs. M. Foster (a health visitor) said she had visited the boy several times since he had been with Mrs. Palmer. The last occasion was on February 22, when the boy looked pale. Mrs. Palmer said he had been unwell with loose stools and wind. Mrs. Foster advised her to take the boy to a doctor. Mrs. Palmer, in evidence, said the child was not quite normal, not being able to walk properly and having difficulty in eating and swallowing. She gave him cod liver oil and malt obtained from a chemist. Asked by the coroner why she did not take the child to a doctor she said she thought he had colic and gave the boy "Indian brandy because it warmed his tummy and got rid of the wind." Mrs. Palmer said the child had wind and vomited a little on March 3. She stayed up all night with him and the next morning went to a chemist's shop to ask for something for the wind and colic. "I told the chemist that the boy had colic and his tummy was hard and asked him for something to bring up the wind. He gave me a bottle of medicine and I was told to give the child the medicine three times in 24 hours and if the trouble did not clear then I should definitely take him to a doctor. Mrs. Palmer said she gave the boy one dose of the medicine but shortly afterwards he became unsettled and died.

Chemists' Evidence

Leonard George Bond, M.P.S., (manager, R. Weston, Ltd., Stephenson Square) told the coroner that his shop sold "Indian brandy" to anyone who asked for it. Different chemists appeared to have their own formula for it but his shop obtained it from the wholesaler. When Mrs. Palmer came into his shop on March 3 she said the boy was having difficulty in keeping his food down. He asked if the child had diarrhoea and Mrs. Palmer said his stools had been a bit loose a few days previously. She had seen a welfare visitor and told her she was giving the child "Indian brandy" and was told to keep on with it. "I asked Mrs. Palmer if the child had seen a doctor and she said no because a health visitor had been," said Mr. Bond. Coroner: She did not tell you that the welfare visitor had advised her to take the child to a doctor? — "No." Mr. Bond said he believed that Mrs. Palmer did say something about the child's tummy being hard. He gave her a bottle of medicine for colic and told her to go to a doctor if the trouble had not cleared in twenty-four hours. Coroner: By listening to a second hand story of what was wrong with the child you prescribed for the child without having examined it yourself. You were acting as a sort of second rate doctor by prescribing without examining the patient. — Mr. Bond: All day long we are being asked to recommend this and that for various conditions. There are a number of drugs we are allowed to prescribe. Coroner: How can you tell without examining the child whether it has colic or appendicitis merely by someone coming to your shop and describing the symptoms. — Mr. Bond: Obviously it is difficult to be certain.

"Would Have Been Diagnosed"

Dr. D. Hewspear (pathologist) said the child's death was due to generalised peritonitis arising from acute appendicitis. If the child had been seen by a doctor he thought the condition would have been diagnosed or suspected and the child sent to hospital. One could not say for certain but his personal opinion was that if the child had been seen by a doctor earlier it would have had a fair chance of recovery. The colic pains, wind and hard tummy were critical signs of appendicitis or peritonitis. For a child to have severe wind over a period was in itself unusual. If the "Indian brandy" masked the colic pains it would make it harder to diagnose the real trouble. Dr. Hewspear said that the medicine prescribed by Mr. Bond was the correct one for colic, but not for appendicitis. At that point Mrs. Palmer said she was sorry she had brought all the trouble on Mr. Bond, who was not to blame. He had only prescribed the medicine she asked him for. Recording a verdict in accordance with the medical findings the coroner said that it was easy to be wise after the event. The child died suddenly on March 4 from generalised peritonitis due to acute appendicitis, from which he must have been suffering in an acute form for at least three days and probably in a less acute form for much longer. Mr. Bond had accepted Mrs. Palmer's own diagnosis although she had no medical qualifications. He accepted her view that the child was suffering from colic and gave her a bottle of medicine which would have been suitable for colic but was useless and rather dangerous in a case of appendicitis because it would mask the severity of the symptoms of appendicitis. Be that as it may I am quite satisfied that neither the medicine prescribed by Mr. Bond nor the "Indian brandy" given by Mrs. Palmer had any connection with the child's death. Parents and those in charge of children like Mrs. Palmer should not treat lightly in any way any internal upset which lasts for more than a day. Chemists should be very chary about listening to parents' descriptions of symptoms of children and old people and then prescribing what would be a good medicine for it. "I do not think a doctor these days would prescribe anything without first examining the child. I think for a chemist simply to listen to a description of various symptoms by a mother, and not to have medical clarification of what these symptoms mean, is a rather dangerous thing."

COMPANY NEWS

Previous year's figures in parentheses

HAFFENDEN - RICHBOROUGH LTD.—Group profit for 1966, £183,536 (£183,740) after tax, £122,511 (£127,604). Final Dividend 20 per cent. making 30 per cent. for 1966 (same).

P. B. COW & CO., LTD.—Group pre-tax profits for 1966 were £605,540 (against £590,515) from slightly lower sales of £9,723,000 (£9,841,000). The dividend total is maintained at 18¾ per cent.

WILLOWS FRANCIS, LTD. — An unchanged interim dividend of 7½ per cent. is declared for the year ending June 30. Group profit for 1966, before tax, is £64,984 (£44,848) and profit after tax, £38,947 (£28,922), less minority interest of £2,002 (£1,483).

ILFORD, LTD. — While the company expects improved results for the current year, the effects of fierce competition and of the increasing sophistication of the technology of the industry will continue to present an uphill struggle, the directors state. Directors Mr. S. T. Ferris and Mr. L. H. Williams are not seeking re-election, both having reached retirement age.

LEWIS & BURROWS, LTD. — Mr. F. R. Greenlaw, M.P.S. (superintendent chemist and formerly joint managing director) has retired from the company. Mr. Greenlaw started as a manager in 1925 and joined the board in 1937. Mr. J. K. Louis, M.P.S. (general manager of the group) has joined the board and becomes superintendent chemist.

J. H. HAYWOOD, LTD. — Mr. F. W. Cammack, after fifty years' service with the company as managing director, retires on March 31. He will be succeeded by his co-director son, Mr. Terence F. Cammack. Mr. Cammack, senior, will continue as chairman of the holding company, Haywood Pharmaceuticals, Ltd., and also as executive director.

SMITH & NEPHEW ASSOCIATED COMPANIES, LTD.—The chairman (Mr. C. A. F. Hastilow) in his review of the accounts for 1966 states that their pharmaceutical research scientists have been successful in developing some new substances which "have been shown to have possible useful clinical potential." They are a non-barbituric hypnotic and another has possible application in the treatment of allergic conditions "by a unique mode of action." An anti-inflammatory drug is also undergoing clinical trial.

J. R. GEIGY, Basle, Switzerland.—An increased net profit of Sw. Fr.23·54m. (£1·94m.) is reported (compared with Sw. Fr.20·82m. for the previous year). Company turnover was up by 12 per cent. to Sw. Fr.1,985m. (£166·25m.) (1965: Sw. Fr.1,777m.). The recommended dividend for the year is unchanged at Sw. Fr.36 per share on an increased capital of Sw. Fr.92m. (Sw. Fr.70m.). The company has begun construction of a new factory complex estimated to cost around Sw. Fr.100m. to produce bulk industrial and agricultural chemicals at Kaiston. It has been planned with complete road and rail links, and will also include its own water purification plant on the river. Production is expected to begin in 1970.

YARDLEY & CO., LTD.—A further offer for the shares of the company by British-American Tobacco Co., Ltd., (Bats) has been successful and has resulted in "Bats" gaining control. Since the first bid, "Bats" has raised the stakes twice and also made a major revision in the terms. Yardley directors, relatives and associates who together owned nearly half the equity and controlled almost three-quarters of the votes; had been firmly opposed to the bid, but after £1·3m. had been added to the offer for the "A" shares on March 8, the Gardner family said they would accept to assure "Bats" of immediate control and of more than half the equity capital. The original offers, announced on December 28, 1966, were worth £23.7m. for the whole capital. The final offers are worth £27·9m.

B.D.H. GROUP, LTD.—Reviewing the year in his chairman's statement (Mr. David L. M. Robertson), states that after adjusting sales to Vestric, Ltd., in real terms sales in 1966 of their U.K. business were little higher than in 1965; improved efficiency and increased sales of some of the more profitable products more than offset the higher costs which had to be borne. Besides the pharmaceutical division, the company's chemicals division also made steady progress in both sales and profits, although export sales were affected by the seamen's strike and business was lost, some perhaps permanently. Less vulnerable to the stoppage, export sales of pharmaceutical products to non-subsidiary markets increased by 14 per cent. but sales by overseas subsidiaries declined in terms of sterling value, due to devaluation of the Indian rupee. Referring to the Sainsbury Committee the chairman hopes that some of the uncertainties hanging over the U.K. pharmaceutical industry may be removed shortly. The preliminary statement of accounts and dividend recommendation have been published (*C. & D.*, March 11, p. 223). The full accounts show that of the £1,786,487 (£1,750,304) trading surplus the wholesaling activities accounted for £475,025 (£554,556). Sales of pharmaceuticals and chemicals amounted to £9·57m. (£8·02m.).

BUSINESS CHANGES

MR. W. TAUNTON, M.P.S., managing director, Frank Simms, Ltd., Chesterfield, has resigned that position. He is to take over the business of Mr. A. L. Manton, M.P.S., 333 Meadowhead, Sheffield, 8, on April 3.

Appointments

DANA SALES, LTD., 6 Paddington Street, London, W.1, have appointed Mr. B. Anthony their sales executive for South-London and South-eastern counties.

THORNTON & ROSS, LTD., Linthwaite, Huddersfield, have appointed Mr. R. P. Marshall representative in their mid-Lancashire area, and Mr. P. Sullivan in North Lancashire, Westmorland and Cumberland. Mr. T. Gordon Jones, who has been representative in North-east Lancashire for twenty-seven years, has now retired.

PARKE DAVIS & CO., have appointed Mr. Selwyn E. Andrews their general manager from April 1, following the retirement of Mr. L. O. Smith (general manager of the company since 1946); Mr. Andrews has held the post of assistant general manager for the past two years. On the same date Mr. D. R. Ross, who has also been an assistant general manager, becomes deputy general manager. Mr. Andrews, was born in New Zealand, and qualified in pharmacy at the New Zealand College of Pharmacy. He gained experience in retail pharmacy before joining Parke-Davis in New Zealand as a representative in 1954.

Four years later he became a field manager and in 1961 was moved to Parke-Davis, Detroit, as area manager for the Pacific and African zone. In 1964, one year before his transfer to the United Kingdom, he became area manager Atlantic zone. Before leaving New Zealand Mr. Andrews became the first president of the New Zealand Ethical Pharmaceuticals Association. Mr. Ross, a chartered accountant, joined the company in 1949, becoming an assistant general manager in 1955. Active in pharmaceutical industry organisations, Mr. Ross was appointed president of the Proprietary Articles Trade Association in 1965.

Mr. S. E. Andrews

Mr. D. R. Ross

PERSONALITIES

MR. T. G. BRAMLEY, M.P.S., for many years in business in Frair Gate, Derby, is to become the next mayor of Bodmin, Cornwall. He gave up his business in Derby after twenty-two years and moved to Bodmin in 1954.

Mr. K. R. ALLSOP, M.P.S., Porlock Avenue, Stafford, was recently presented with a gold medal from the Association of Chief Police Officers for attempting single handed to arrest two violent armed criminals who had threatened a postmistress. The medal was presented in London by the president of the Association, (Mr. A. F. Wilcox, chief constable of Hertfordshire). The criminals were arrested and gaoled for five years.

DEATHS

DICKSON.—On March 9. Mr. Reginald John Dickson, M.P.S., 294, Hangelton Road, Hove 4, Sussex. Aged 79. Mr. Dickson qualified in 1913. *Mr. S. S. Howard* (secretary Brighton and Hove Association of Pharmacy) writes.—Mr. Dickson's many friends in the Brighton and Hove district, and his former colleagues in Leicestershire and Yorkshire will learn of his passing, in his eightieth year, with deep regret. They will be glad to know he suffered no long and painful illness and that his end was peaceful.

KING.—On March 2, Mr. Cyril Clifford King, M.P.S., Havant Road, Farlington, Portsmouth, Hants. Mr. King qualified in 1921.

NORTON. — Recently, Mr. Austin Douglas Norton, M.P.S., 27 Black port Road, Sutton Coldfield. Mr. Norton qualified in 1910 and was chairman until his retirement in 1966 of W. H. Wilkins, Ltd. The Midland chain of fifty shops was started soon after Mr. Norton opened his first business in 1913.

SHEEHAN.—Recently Mr. Patrick J. Sheehan, M.P.S.I., Bridge St., Strokestown, co. Roscommon. A native of Rathdrum, co. Wicklow, Mr. Sheehan qualified in 1929 and had conducted his own pharmacy in Strokestown for many years. Succeeding him in the family pharmacy is his daughter, Maura Sunniva, who qualified in 1964. Another daughter is an optician.

ROSS.—On March 2, Mr. Vivian Ross, M.P.S., J.P., Langstrath, Queens Avenue, Maidstone, Kent, aged sixty-one. Mr. Ross qualified in 1927 and was the governing director of Stonham & Son, Ltd., Maidstone. Deputy chairman of the Central Kent hospital management committee, he was for many years a member of the former Kent and Canterbury Pharmaceutical Committee.

SCULFER.—Recently, Mr. John Sculfer, M.P.S., 2 Brandwood Court, Glenair Avenue, Lower Parkstone, Dorset. Mr. Sculfer qualified in 1928.

SMITH.—Recently, Mr. William Shaw Smith, M.P.S., 31 Ersham Road, Hailsham, Sussex. Mr. Smith qualified in 1919.

NATIONAL PHARMACEUTICAL UNION

February meeting of Executive Committee

THE N.P.U. Executive Committee, which met in London on February 22, heard a report of the first nine months of the Pharmacy Planning Department's operations. Nearly 300 inquiries had been registered, all of which had been, or were being, serviced from the Union's headquarters. About half the inquiries had entailed personal visits, and over one-third were more than 150 miles distance from Mallinson House, Southgate. Around 100 drawings for shopfront layouts had been prepared in the office, and many had resulted in orders being placed with shopfitters recommended by the Union. To assist with the forward planning of the department's activities a survey of members' experiences and opinions on the process, and on the subsequent effects of modernisation on turnover and staff, was being conducted.

It was agreed that members should continue to be encouraged to support the manufacturers of infant milk foods whose distribution policies had been broadly endorsed by the Monopolies Commission in its findings.

Marketing policy

The chairman of the Marketing Policy Committee (MR. W. TALVAN REES) reported a "tremendous success" for the recently introduced prescription bags. About 2 million had been ordered within a few days of being on offer, and the initial demand had shown little sign of slackening by the end of the month. Many members had remarked on the high quality and appearance of the bags, and publicity in the pharmaceutical Press had resulted in inquiries from outside the membership. For example, a school of pharmacy had asked for a supply for use in its pharmaceutics department and a local medical authority had applied to include the prescription bags, with their safety imprints, among items in a medicines-with-care campaign.

Further progress was reported by the chairman of the subcommittee MR. H. B. COULSON) in the negotiations with the City and Guilds of London Institute about the setting-up of college courses and examinations. The original plans made by the Pharmacy Assistants Training Board would require, he said, gradual expansion of administrative staff as the Board's commitments developed. The N.P.U. itself would also be augmenting its staff-training services to members, and a three-year programme was approved in principle. It would be built upon the existing highly successful framework of the N.P.U. staff-training course and the local staff-training conferences. Whole-day and two-day training schools were being planned, as were seminars on management.

MR. A. HOWELLS, who was in the chair of the Publications Committee for the March meeting, reported progress in plans for extending several business services for members. Lapel badges for assistants were being examined. The N.P.U.'s "Unofficial List of Formulae" was being revised for the benefit of new members.

Mr. C. H. Smith (chairman, Local Organisations Committee) outlined detailed plans made for the spring 1967 area N.P.U. meeting at Malvern on Sunday, May 14. A film illustrating modern concepts of shop modernisation, to be shown as an additional item on the programme, would be linked with tableaux of photographs of members' own completed modernisation projects. The invitation list for the meeting was being extended to bring in branch areas in South Wales. The next area meeting in rotation would be held at either Durham or Harrogate in the Autumn.

Employment of School Children

In response to an inquiry from a Scottish N.P.U. member, the indemnity status of pupils attending pharmacies for a few hours weekly as part of local education schemes had been considered. The directors of Chemists' Defence Association had decided that, pupils or students who were allowed to work in members' pharmacies as part of an education programme and without payment by members for work done, should be regarded as being covered by C.D.A. indemnity.

Because the law in Scotland relating to the taking of legal charges on short-term leases was different from that in England and Wales, new ideas for securing loans from the fund for Scottish members were being examined. Meanwhile loans in Scotland would normally be available only where there was a registered lease or where the purchaser of a business was also buying the property.

TRADE NOTES

Discontinued.—Beecham Ethical Distributors, Great West Road, Brentford, Middlesex, announce that Dencyl linctus has been discontinued.

"Refills" Discontinued. — Moore Medicinal Products, Ltd., Aberdeen, announce a change of policy in the marketing of their PIB (pressurised Iso Brovon). From April 1 the pressurised unit refills are being discontinued. The complete units are at reduced prices.

Legal Action if Necessary.—Dunster Laboratories, Ltd., Yorkshire Street, Rochdale, Lancs, state that it has been reported to them "not for the first time" that certain doctors and pharmacists have been told that the company's products are no longer available and/or that the company is no longer in existence. Those statements, they say, are completely untrue. All the company's products continue to be available through the normal channels as is full information about them from the company's medical department. Messrs. Dunster state that "if there are any further examples of these malicious untruths reported to us, we intend to take legal action against those concerned.

A Toothbrush That May be Boiled.—Claimed "the only toothbrush marketed in Britain that is found to withstand regular sterilisation in boiling water," the Norwegian-made Jordan toothbrush is understood to have achieved a widespread popularity in Britain on the strength of recommendations by satisfied users and despite a price above average. The Jordan toothbrushes are marketed and distributed in the United Kingdom by Britanol, Ltd., Kersal Vale, Manchester.

The brushes are of a shape and design evolved after close consultation with the dental profession. The long-lasting V-shaped tufts are designed and "lock-set" to clean thoroughly between the teeth, and each strand of the toothbrush is rounded so as not to damage tooth enamel. The brushes are in hard, medium and soft textures for adults and in a special "junior" texture for children. Handle colours are black, white, red, blue or yellow, with the "J" motif inset on the handle in contrasting colour. Each toothbrush is sold in a clear and sealed vacuum-form pack.

Holiday Closings

Normal Easter holiday in the industry is from closing time on Thursday, March 23 until the morning of Tuesday, March 28. Among exceptions are the Grangemouth office of Imperial Chemical Industries, Ltd., which will be open on March 24 and 27. The Croydon and Walthamstow branches of Unichem, Ltd., Crown House, Morden, Surrey, are providing a full normal Saturday service on March 25, and Unichem, Nuneaton, full services on March 24 and 25, though the Nuneaton depôt will be closed on March 27 and 28 except that an automatic order service will remain in operation; Unichem, Leeds, are operating a full service on March 24, but a "skeleton" staff service only on the morning of March 25; they will be closed on March 27 and 28 except that an automatic order service will remain in operation. At the Greenford and Dukinfield warehouses of Glaxo Laboratories, Ltd., a skeleton staff will be available for emergencies on March 25 but the company's Bargeddie warehouse will be closed on March 27 only.

Barclay & Sons, Ltd., P.O. Box 15, 37 Devonshire Place, Brighton 1, will be open for orders for pharmaceutical specialities on the morning of March 25.

United Chemists' Association, Ltd., Ucal Works, Cheltenham, Glos, are operating a normal service on March 25.

The following have announced that urgent supplies are available from John Bell & Croyden, 50 Wigmore Street, London, W.1:—

Geigy (U.K.) Ltd., Wythenshawe, Manchester and Isleworth.
Paines & Byrne, Ltd., Pabyrn Laboratories, Perivale, Greenford, Middlesex.
Merck Sharp & Dohme, Ltd., Hoddesdon, Herts.
Upjohn, Ltd., Fleming Way, Crawley, Sussex.

Bonus Offers

Albion Soap Co., Ltd., 30 Thames Street, Hampton-on-Thames, Middlesex. Albion milk and sulphur soap, toilet and bath sizes. Twelve invoiced at ten. Until April 14.

Clay & Abraham (Mnfg.), Ltd., 40 Hanover Street, Liverpool, 1. Ulcanon and Ulcanon Gelets. Twelve Ulcanon and fourteen Ulcanon Gelets invoiced as twelve and twelve respectively. Twenty-four and twenty-six as twenty and twenty-four respectively; and seventy-two assorted or separate plus 1 doz. Ulcanon Gelets invoiced as 6 doz. only. Till May 31.

E. C. De Witt & Co., Ltd., Croydon, Surrey. Gum-eze. Thirteen invoiced as twelve. Till May 31.

Jackel & Co., Ltd., Kitty Brewster Estate, Blyth, Northumberland. Sweet Sue talc pads. Forty-eight invoiced as thirty-six. Plus display stand. Till April 24.

Lambert Chemical Co., Eastleigh, Hants. Polyblonde or Polyfair. Twenty-eight invoiced as twenty-four. Till April 21.

Maw's Pharmacy Supplies, Ltd., Barnet, Herts. Maw's Simpla feeding system. Extra 5 per cent. for stocking early.

Max Factor, Hollywood and London (Sales), Ltd., 16 Old Bond Street, London, W.1. Max Factor family deodorant spray, perfumed spray deodorant and roll-on deodorant. Twelve invoiced as eleven.

Pharmaceutical Specialities (May & Baker), Ltd., Dagenham, Essex. Anthical cream (25-gm. tube). Anthisan cream (25-gm. tube) and Avomine tablets (tin of ten). Ten as invoiced as nine. Until August 31.

Premium Offers

Combined packs of Colgate's shaving creams and Personna Super stainless-steel blades are being promoted nationally from April 1 (more than 50 per cent. off retail price) to purchasers of Colgate's instant shave (aerosol); lather shaving cream; and giant brushless shaving cream.

Beecham Toiletry Division, Great West Road, Brentford, Middlesex. Silvikrin hair cream. Sixpence off Junior size; eightpence off large size.

Chesebrough-Pond's, Ltd., Victoria Road, London, N.W.10. Fresh Start cleansing gel. Lady's handkerchief with each purchase. Till April 30.

Lambert Chemical Co., Eastleigh, Hants, Polycolor hair-colouring cream. Nightie and *negligée* at a reduction of 26s. 5d., plus top from carton of Polycolor shampoo. Till April 21.

Jackel & Co., Ltd. Kitty Brewster Estate, Blyth, Northumberland. "Living Hair" (reformulated). 8s. 11d. tube at 5s. 11d. Till April 30.

SHOPFITTING NOTES

Unit Fittings to Rent or Buy.—Eustace & Partners, Ltd., Alliance Works, Western Avenue, London, W.3, invite chemists to take steps to increase sales now by rental or purchase of the unit shopfittings they can offer, so reducing the effect of the selective employment tax.

Three-bin "Merchandiser."—Middlehurst, Ltd., Brock Lane, Maidenhead, Berks, have produced the three-bin "merchandiser" illustrated (catalogue no. TW/105) designed to pass on the cost-cutting of automated wire-working machines recently installed in their works. The lowest bin is 12 in. deep, 24 in. in diameter; the middle bin 12 in. deep, 20 in. in diameter; and the top bin 10 in. deep, 16 in. in diameter. Height from top basket to floor is 4 ft. 8 in. and the floor space occupied is only 18 in. x 18 in. The baskets are polythene-coated in white and the framework is stove-enamelled.

NEW PRODUCTS AND PACKS

PHARMACEUTICAL SPECIALITIES

Water-Miscible Ear Drops.—For softening wax in the ear, Norgine, Ltd., 26 Bedford Row, London, W.C.1, are making available on March 28 Waxsol water-miscible ear drops. By reason of its low surface tension, Waxsol is claimed to penetrate and soften the wax. Being water-miscible it is readily wettable by the syringing solution.

Improved and in Puffer Pack.—The British Drug Houses, Ltd., Graham Street, London, N.1, are introducing Mycil-A, an improved formulation of Mycil powder, presented in white puffer pack containing 75 gm. The new formula is chlorphenesin 1·0 per cent., hexachlorophane 0·5 per cent., calcium stearate 5·0 per cent., magnesium carbonate 5·0 per cent., zinc oxide 5·0 per cent., talc 25·5 per cent., starch 58·0 per cent.

OVER-THE-COUNTER MEDICINALS

"Face-lift" for the Pack.—Carter's Little Liver pills are now being issued by Carteret Products, Wear Bay Road, Folkestone, Kent, in new streamlined package in warm grey colour.

Instant Breath Purifer.—F. C. Paton (Southport), Ltd., 1a Peets Lane, Southport, Lancs, are promoting a new product Mini-drop, one drop of which on the tongue is claimed to cancel out breath odours instantly.

"Revolutionary" New Label.—Mil-Par laxative of Phillips Scott & Turner Co., 2 St. Marks Hill, Surbiton, Surrey, has been given a new, two-colour label in blue and white. Below the clear title "Mil-Par the effortless laxative" is an illustration depicting a nurse. The blue of the bottle remains; the screw top is changed from blue to white.

Gum-soother and mouth-wash.—Primarily a treatment for babies teething troubles a new product Gum-eze is being launched by E. C. De Witt & Co., Ltd., Croydon, Surrey. A drop of the liquid, applied by finger tip or cotton-wool swab, is massaged on to the sore gum, bringing immediate relief. Having also an antiseptic content, Gum-eze has a secondary use, when diluted, as a mouth-wash.

SUNDRIES

A New Cordless Shaver.—Philips Electrical, Ltd., Century House, Shaftesbury Avenue, London, W.C.2, have launched a new Philishave Traveller cordless electric shaver in black new travelling case with spring lid and built-in mirror. The new instrument offers the company's well known rotary-action shaving (with microgroove in each shaving head). Four penlight batteries are understood to be enough for six week's shaving. The shaver has an ejector to make battery-changing a matter of seconds.

Infant Feeding Set. — A complete artificial feeding set, designed to simplify the process of feeding baby, has been introduced by Maws Pharmacy Supplies, Ltd., Barnet, Herts. Basically it consists of the five essential items — bottle, teat, measuring jug, mixer and cleaning brush — but they are all items with special features. The 8 oz. Simpla feeding bottle, made of Pyrex glass, is wide-necked, comfortable to handle. To ensure an accurate feed, measures are clearly marked on the bottle and, to make filling even easier, a special screw-down cap provided with each bottle can be placed upside down on the neck and used as a funnel. After it has been filled the bottle can be sealed with the cap, making it ideal for travelling. The new Maws Universal teat, which will also fit most narrow-necked feeding bottles, is the ideal "cherry" shape and is available in three constant hole sizes. The Simpla measuring jug holds 40 oz. — enough for five 8 oz. feeds which, together with the one in the bottle, means that all the day's feeds can be mixed in one operation. The jug is clearly marked with measures and is fitted with a flip-back lid to keep the food free from dust and germs. The Simpla mixer has a dual purpose. One end has holes for use as an up-and-down whisk when making feeds in the bottle; the other end has a spatula blade which serves as a beater when mixing in the jug. The spatula is also useful for levelling off a measure of milk powder. The new long-handled nylon brush is specially made to reach every part of the Simpla feeder. Every item in the Maws Simpla feeding system can be sterilised by boiling or by the cold-water method.

Health Lamps.—Dr. Kern's portable ultra-violet/infra-red health lamps are being distributed in Britain by Denham & Morley, Ltd., 173 Cleveland Street, London, W.1. Six different models are in the range. Three of them —the Comtesse, Princess and Royale incorporating the adjustable variofilter, a patented device consisting of a segmented heatproof glass sleeve that fits over the mercury vapour tubes and is said to filter certain of the ultra-violet rays. As it is connected to a sliding mechanism with graduated scale, the amount of opening or closing of the filter is easily controlled, enabling the user to regulate accurately the relationship between the tan-promoting and the tonic rays. All models are designed to work independently or in unison. They have built-in timers and are fitted with a fixed mains lead that tucks away in an accessory compartment. Comprehensive instructions are fixed permanently on each appliance and protective goggles are supplied as standard. The two top models in the range, the Princess and Royale-variofilter feature a separate on/off switch and an automatic safety cut-out. The Royale-variofilter has a pilot light and built-in tape measure.

FOODS

Redesigned Packs. — Energen starch-reduced crispbreads (wheat and rye) are now being issued by the manufacturers, Energen Foods Co., Ltd., Birling Road, Ashford, Kent, in re-designed four-colour packs.

OSMETICS AND TOILETRIES

New N.P.U. Products. — A cleans-
ng cold cream and a denture-cleansing
iquid have been added to the National
harmaceutical Union range. The

Above: Chem-plus display card. Left: Cold cream with background display.

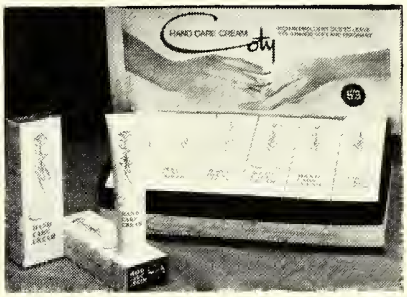
leansing cold cream is in an elegant
edgwood-blue pot, is lightly per-
umed, and of petal-soft texture. A
isplay-piece, designed to emphasise
e product's quality, is supplied free
ith each doz. The denture cleansing
quid, named Chem-Plus, has a blue-
nd-white plastic pack with functional
easure cap and "really cleans den-
ures."

**English Lavender for the Out-door
irl.** — J. & E. Atkinson, Ltd., 45
ortman Square, London, W.1, are
aking available from Easter Atkin-
n's English lavender in bottles of 2,
7, 14 and 28 oz. Bottle and pack
ve been designed for Messrs. Atkin-
n in Italy. The glass bottle is quadri-
teral in shape, its only decoration a
rooved circle in the centre of which
the English lavender insignia in yel-
w and gold, with small spray of
rple flowers. The carton carries a
odernised version of regency stripes
pale yellow and grey, with the com-
ny's name and crest in gold.

Frosted Nail Colours.—Myram
icker, Ltd., Hook Rise, Kingston By-
ss, Surrey, state that the "Quick-
ake" frosteds new formula is now
ntained in the thirteen shades of
arl nail colour in the Gala range.
he product is described as "quick-
ake" because only a quick flick of
e bottle is required to ensure com-
ete dispersion of the pearl. The
lours are merchandised in a semi-
rmanent "dispenser," holding three
each shade. The formulation is
imed virtually the first on the
nited Kingdom market.

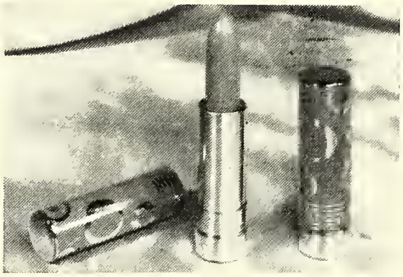
Lip "Blusher."—Transparency, gloss,
d "a hint of colour" characterise the
w "Lip blusher" of Revlon Inter-
tional Corporation, 86 Brook Street,
ndon, W.1, described as "a brand
w category of lip make-up"—not a
stick because a lipstick gives
paque" colour that covers the
tural lip tone; not a lip glosser, be-
use a lip glosser has no colour of its
n. It is right in between the two!
ere are six shades: Blush of pink;
ush of coral; blush of orange; blush
mauve; blush of beige and blush of
n.

Hand-care Cream.—Coty (England),
d., 3 Stratford Place, London, W.1,
nounce that a new Coty hand-care
am replaces the former hand-treatment cream. After reformulation the product is now, it is claimed, easily absorbed into the hands, rich in nourishing oils, and delicately perfumed. It is "a rich emollient cream that helps to prevent rough, dry, chapped hands," replacing the natural oils that detergents, hot water, etc., take from the skin. Non-greasy and light-textured, it is suitable for either day or night use. The pack is a white polythene tube, printed in green, gold-blocked and issued in matching white carton repeating the green and gold design of the tube, the content of which is 27 gm. A display outer containing twelve single units is available.



Now in Aerosol Pack.—P. & M.-Warrick, Seymour Road, London, E.10, have introduced into their Go range of deodorant products an aerosol spray that, from a two-second use, ensures, they say, day-long personal freshness Go is understood to dry immediately and never to become sticky. Its delicate fragrance does not compete with other perfumes worn. The container, which is in a cool aqua-green and white pack, holds 115 gm., and the cap has been specially designed for easy replacement and extra firm fitment.

Creamy Lipsticks for the Spring.—Goya, Ltd., 161 New Bond Street, London, W.1, are introducing a new range of creamy, moist lipsticks, the Lipsheens, in a range of six shades, and available to the public from mid-April. The range comprises Lipsheen peach, "a soft satiny peach," Lipsheen pink, "a luminous lilac-pink," Lipsheen apricot, Lipsheen honey, "a russet lip blush," Lipsheen red (clear flame red) and Lipsheen rose. A counter display card, special tester and display merchandiser carrying 1½ doz. are being made available.



A Talc to match the Perfume.—An addition to the new *Reverie* range of Yardley of London, Ltd., 33 Old Bond Street, London, W.1, which comprises fragrance, Cologne, spray mist and roll-on perfume, is a perfumed talc in the same note (the musky, woody, smoky category). Like all Yardley talcs it has a particularly high perfume content and is packaged in an attractive container, shaped to fit the hand, and in pale apricot to match the perfume. The talc is claimed extra fine and free-flowing, so that it may be quickly and easily shaken on to the desired areas and rubbed easily into the skin. Its satin-smooth finish gives it more "slip", thus enabling clothes to be donned with maximum comfort. It contains also a deodorant and possesses moisture-absorbent properties.

REFORMULATED AND REPACKAGED: New Loxene extra shampoo as it appears after having been remodelled by the manufacturers, F. W. Hampshire & Co., Ltd., Sunnydale, Derby.

BRANCH EVENTS

PLYMOUTH

Buffet Dance

PLYMOUTH Branch of the Pharmaceutical Society held its first buffet dance recently. The usual annual dinner and dance had been cancelled owing to the sudden death of the chairman (Mr. E. W. Chanter). The function is reported to have been well supported, the attendance including members of neighbouring branches. The Branch chairman, (Mr. L. W. J. Simpson) paid tribute to the work of the social secretary, (Mr. T. Telford) and the social committee in making the event such a success.

NORTH LONDON

£150 for Benevolence

NORTH London Pharmaceutical Association's annual dinner and dance, held this year on February 16, is made the occasion for a substantial contribution to the Benevolent and Birdsgrove House funds of the Pharmaceutical Society. This year's record amount of £150 was due as to one-third the proceeds of a tombola held on the evening of the dance and as to the remainder to unflagging efforts by enthusiasts throughout the year. "Nothing happens unless you make it happen," as the chairman said. Far from exhausting members' goodwill this seems to make the annual social event a most friendly occasion. Whether that is an effect, as the chairman (MR. A. J. KELLY) modestly suggested, of putting the chairman back in office for a second year and expecting him to make a better showing in the second time, is arguable. Certainly much of the success of the 1967 event may be ascribed to the charm of the chairman, whose address was mainly taken up with thanks to his secretary and committee (especially Messrs. John Iles and A. J. Edwards) and welcomes to guests—a "special" one to Mr. George John, of Finchley Branch, with which the Association has close ties. SIR HUGH LINSTEAD, who responded on behalf of the ladies and guests, reminded or informed them that he was coming back to his old "Branch," since almost his whole boyhood had been spent at Winchmore Hill, and that he would be going on to Paris next morning with two other members of the Association, Messrs. Allen Aldington and Nicholas Herdman. Sir Hugh said he was sometimes tempted to say "Stop the pharmaceutical world, I want to get off," but reminded himself that the troubles faced by pharmacists in Britain were shared by those in other countries. He hoped, in the words of his successor as president of the International Pharmaceutical Federation, that pharmacists would start thinking more of their unity than of their differences.

WEST HAM: E. METROPOLITAN

Annual Dinner and Dance

THE need for unity among pharmacists had become more important than ever before by the result of the recent Court of Appeal decision in the action *Dickson v. The Pharmaceutical Society* said DR. J. C. PARKINSON (deputy secretary, Pharmaceutical Society), when he proposed the toast to the West Ham Association of Pharmacists and the East Metropolitan Branch of the Society at their annual dinner in London on March 2. The example set by the two organisations in joining together for their meetings could, he added, "be emulated with advantage by others in higher walks." Dr. Parkinson congratulated both bodies on their past record in the educational field, in which they had promoted frequent extension courses. He must have been one of their first lecturers, he said, for he recalled that he had fulfilled an engagement at the West Ham "tec" in 1956. Dr. Parkinson announced that the Council had that week decided to appeal to the House of Lords against the decision of the Court of Appeal. Meanwhile it was interesting to note that "we are not alone in our discomfort." New Zealand pharmacists had lately had a decision made against them (*C. & D.*, February 25, p. 174) by the Privy Council. So far as Great Britain was concerned some of the objectives the Council had been hoping to implement might be attained, said Dr. Parkinson, through the branches. In proposing the toast, he was probably performing that function as an official of the Society. [Dr. Parkinson has been appointed principal of Brighton College of Technology as from June 1.] MR. A. W. NEWBERRY (president of the association and chairman of the branch, who responded, congratulated Dr. Parkinson on his new appointment, but added that his resignation from the Society's staff would be received with mixed feeling. MRS. M. NEWBERRY, in her response to the toast "The Ladies," proposed by DR. R. MAXWELL (secretary, Stratford division, British Medical Association), gave an amusing interpretation of "*Homo Pharmaciens*." A tombola arranged after the dinner realised £60 for the benefit of Birdsgrove House.

Correspondence

Letters when received must bear the name and address of the sender, not necessarily for publication. The Editor does not hold himself responsible for the views expressed.

Tidier Windows

SIR, — For more years than I care to remember my two 10-ft.-long windows have carried Kodak glass pelmets. I have just spent most of the morning removing them and am delighted with the result; so much cleaner and tidier-looking! I can recommend it most strongly to other chemists.

N. BUCKLEY,
London, S.W.11

Account Closed

SIR,—After having had an account with Yardley & Co., Ltd., for thirty years we are now informed that the account must be closed. The nearest business handling Messrs. Yardleys goods is nine miles from us. Have we no redress in this matter?

CORBYN, LTD.,
Stradbroke, Norfolk

How to Survive

SIR, — The Budget is approaching, and a very new type of tax is in store for the retail pharmacy. It will break the camel's back of the small shop. My advice is —

1. Pay all your accounts up to date and promptly.
2. Go through your stock carefully.
3. Clear out all your "rubbish."
4. Have a "spring sale" and sell the "stuff" at any price.
5. Order once a week only with a regular stock check.

GOOD START

Visitations

SIR,—How strongly I wish to support Mr. Onley's letter (*C. & D.*, March 11, p. 228) concerning the growing habit of area managers accompanying representatives on their calls. No matter what excuse is offered by the area manager, there is only one reason for these dual calls—sales pressure. If the representative is new to the job, the A.M.'s presence may be useful for training purposes, but if the representative is established, it is an insult to him, and an embarrassment to the chemist. The embarrassment is greater when the pharmacy is small, and valuable customer space is occupied unprofitably by two salesmen and their sample cases. I can assure Mr. Onley and all other chemists that they will be doing the rep. a very good turn if they ask the uninvited A.M. to leave. I should know, for after fifteen years calling on chemists I have just acquired one of these ambitious A.M.'s.

ODD MAN OUT

SIR,—With reference to the letter in (*C. & D.*, March 11, p. 228), from Mr. Robert M. Onley, 11 Carlton Road, Nottingham, headed "Cutting the Odds," I wish neither to answer nor to criticise Mr. Onley. I concede that he should have the right to run his business as he likes. However, I would not wish my name to be associated with any suggested protest by the National Pharmaceutical Union, and I feel sure they would not wish to take any action. I in fact heartily welcome the visit of any area manager, or better still, sales manager or even managing director, to discuss business relationships etc., as they affect my business and my business only. With regard to paragraph 3 of Mr. Onley's letter, if I felt I was being sold goods by intimidation I would consider it was time to give up business.

L. S. BELLAMY,
Chelmsford, Essex.

Appreciated

I REGRET that now I have retired from business, I shall have to discontinue my order for the *C. & D.* Let me say I have found the Price List very useful even since I gave up my business and regret having to do without it.—*H.E.H.*

Poser Solution

THE prescription pesented as a "poser" last week was for "Sp Eskornade, ib.d. Mitte 30."

C&D
CHEMIST AND DRUGGIST

For Retailer, Wholesaler and Manufacturer
ESTABLISHED 1859

Published weekly at
28 Essex Street, Strand, London, W.C.2
TELEPHONE: CENTRAL 6565

Better Never Late

INCREASING competition in shopping streets and concomitant problems of man-power in general-practice pharmacy are sound reasons for approving the decision of the Pharmaceutical Society to set up a special committee to examine the question of the planned distribution of pharmacies. Regrettably however, it seems to us the decision has been rather tardily taken. The stage has been reached at which the Committee's deliberations could well be overtaken by events and its findings, if any, offered too late to promise any real benefits to the membership.

It is more than five years since the report of the Committee on the General Practice of Pharmacy (see *C. & D.*, October 7, 1961, p. 397), referred to the need for the pharmaceutical community to accept the full responsibilities of providing a pharmaceutical service. The Committee in that report pointed out that individual pharmacists could no longer decide for themselves what sort of service they should give and that it was no longer satisfactory to let matters take their course. The recommendation was made that a degree of central and local planning was needed to ensure that the public had reasonable access to pharmaceutical services. Such planning would involve co-operation to overcome the difficulties of small pharmacies and the consideration of the proper organisation of pharmacies capable of meeting needs beyond the resources of the small business.

Those problems, which were highlighted by the Committee on General Practice, have been even more sharply accentuated by subsequent continuous contraction in the number of retail pharmacies, producing a readily evident situation that should have prompted the Council to take action long before matters had reached their present position.

Even now the Council has not made known the terms of reference of the Committee. It is most important that it should be given authority to seek evidence from all facets of the profession and indeed all sections of the community. Especially should it invite evidence from the National Pharmaceutical Union, other trade unions of employers and employees, and such organisations as the Company Chemists' Association and Ministry of Health.

Perhaps the most important consideration is that the Committee should investigate and report with all speed. From that aspect it is possibly a little unfortunate that the Committee should be comprised entirely of individuals who are already giving so much of their time to pharmaceutical matters that they can give little enough to the new task. For that reason and on other general grounds we feel that it would have been advantageous to have included at least a proportion of suitably qualified non-members of Council to deal with this important subject.

Drug Share Movements
TAX FEARS AFFECT MARKET

FEARS that taxes will have to be raised in order to meet the Government's massive increase in spending plans for 1967-68 were undoubtedly a major and adverse influence upon industrial equity markets during recent weeks. Although some forecasts of what the increases are likely to be have subsequently been regarded as too pessimistic, that some increase is on the way is regarded by many in the City as a near certainty. Business has been at a low ebb, though with the general level of dealers' books being on the thin side prices have held up quite well and indeed have moved ahead in some instances.

Reflecting moderate support in a market conforming to the overall pattern shares of companies in the pharmaceutical section show many rises compared with levels obtaining three months ago. For example. Glaxo were bought and with dealers short of them the price improved smartly to 39s. 6d., a rise of 3s. 9d. Reckitt & Colman (Holdings) were 1s. 3d. higher at 28s. for the same reason. The price of Bellair Cosmetics shares reflected the board's optimism with a rise of threepence at 15s. 4½d. Smith and Nephew shares remained a steady market at around 10s. 3d., while Boots Pure Drug were in moderate request in anticipation of the next results, and the price responded with a rise of 4½d. at 17s. 1½d. There was further steady buying of Cussons Group following the increased half-yearly profit figures, the price moved up ninepence further at 11s. 3d. There was a favourable market response to the results for 1966 reported by B. D. H. Group. Standing at around 18s. 3d. ahead of the announcement the price of those shares quickly bounded up to around 20s. 1½d. following buying touched off by the news. Despite the results for 1966 reported by Unilever the shares moved up to around 31s. 3d.. but quickly reacted to 30s. 9d. Sanitas Trust reversed their easier trend of three months ago; fresh buying, some of it based on the belief the price fall had been overdone. lifted them 1s. 10½d. to 11s. 7½d. Ahead of the interim statement Arnold M. Gee stood at 2s. 3d. but they declined to 1s. 7½d. on the news that the half-way-stage dividend was to be 5 per cent. and the board's warning that rising costs and the full impact of "jobs tax" "seem almost certain" to result in lower profits in respect of the current year.

NEW BOOKS

Universal or Selective Social Benefits.

> ARTHUR SELDON and HAUISH GRAY. *The Institute of Economic Affairs*, 66a Eaton Square. London, S.W.1. 8½ x 5½ in. Pp. 70. Paper-back. 10s. 6d.

IN the first part of the book Mr. Seldon analyses findings from a new survey on public opinion about the welfare state carried out by the Institute in 1966 and details new ways for reform with the objectives: more aid for people in need; more choice for everyone and more welfare out of the national product. He argues for experimentation in selected areas with alternative welfare systems suggesting that. as a short term measure, taxes should be increased on all benefits, unless they have been earned on contributions or are paid to the needy. The proceeds, which might amount to £1,000 million in the early years, should be used to reduce taxes on earnings. Second. Mr. Seldon proposes tax rebates on payments for private welfare services, and vouchers or cash grants for people with relatively low incomes and large families to help them pay for medical fees, school fees. or insurance. etc. The long term aim should be to reduce taxation, he says. In the second part Mr. Gray analyses replies to questions in three I.E.A. surveys made in 1963, 1965 and 1966 and in eight independently conducted surveys.

HOSPITAL PHARMACY FORUM

PHARMACY OR DISPENSING?

ONE of the conditions on which the medical profession agreed to participate in the National Health Service was the preservation of the right of the individual doctor to decide for himself the drug or preparation required for the treatment of his patient. Since 1948 successive Ministers of Health have agreed that there can be no violation of that principle and in fact any attempt to impose restrictions would be tenaciously resisted. In practice it means that the doctor may not only decide the drug to be supplied. By prescribing under a proprietary name he can also specify the source of supply.

Most hospitals have now given the pharmacist authority to ignore proprietary names used on prescriptions and to supply instead a "standard" drug or an alternative brand. However, the Ministry has made it abundantly clear that the practice is only permissible when members of the medical staff have agreed to it *as individuals*. Hospital authorities have no power to *compel* doctors to accept "substitution," and even when it is done as the result of a collective decision by the senior medical staff a consultant can, without giving any reasons, insist that it should not apply to prescriptions originating in his department.

Few Difficulties in Practice

Generally speaking, however, few difficulties are encountered in practice. The pharmacist is trusted to ensure that, when a departure is made from the strict letter of the prescription, the quality of the drug dispensed is at least equal to that of the one prescribed. In making the substitution he is acting not on his own authority but on that delegated to him by the individual prescriber concerned, and little trouble is likely to arise provided that he keeps that fact well in mind. Any prescriber is free at his discretion to withdraw authority to "substitute," and the pharmacist has no alternative but to comply. When personal relationships are good—as they usually are—he may argue, but he must always be ready to withdraw in the face of a determined stand. If the dispute is allowed to go to higher authority the outcome is certain. In the eyes of the Ministry the function of the pharmacist is to supply what the doctor orders and not to decide what is and what is not to be supplied.

Yet if there is any purpose at all in the pharmacist's training it is surely to enable him to decide whether or not two pharmaceutical preparations are identical. In fact he is in a far better position to adjudicate than the doctor, who knows little or nothing about such matters as the effect of particle size in the absorption of insoluble drugs. Surely that is pharmacy, and if the pharmacist is not the expert who is? It is little wonder that our claims in the field of clinical pharmacology have been challenged while we still go unrecognised as experts in pharmacy.

Most hospital pharmacists are only too well aware of the need for an improvement in the standard of prescribing. Today doctors are ill equipped to choose drugs on a rational and scientific basis, and most of them fall an easy prey to the promotional efforts of the pharmaceutical industry. The prescription form is virtually a blank cheque that will eventually have to be met, not by the doctor or the patient but by the Exchequer, and that in itself is not conducive to the cultivation of good prescribing habits. Yet without some authority the pharmacist is almost powerless to exert any real influence. He can cajole and persuade but can never say "No." He does not ask to be allowed to decide which drug is to be given; only that his pharmaceutical expertise should be recognised by allowing him to decide on the form in which the medicament is to be presented.

It is not easy to understand why pharmacists as a whole accept, almost without protest, a system under which they are denied the right to practise their profession. Pharmacy has for so long been regarded as synonymous with dispensing that the slur seems to have gone almost unnoticed. Yet during the past two or three decades pharmacy has been transformed from a skilled craft into an academic discipline. Dispensing now occupies a small and declining place in the pharmaceutical curriculum, and the undergraduate who has been encouraged to think of himself as an independent scientist is becoming increasingly unwilling to act as a doctor's technician after graduation. He knows what pharmacy is and—quite naturally—he wants an opportunity to practise it.

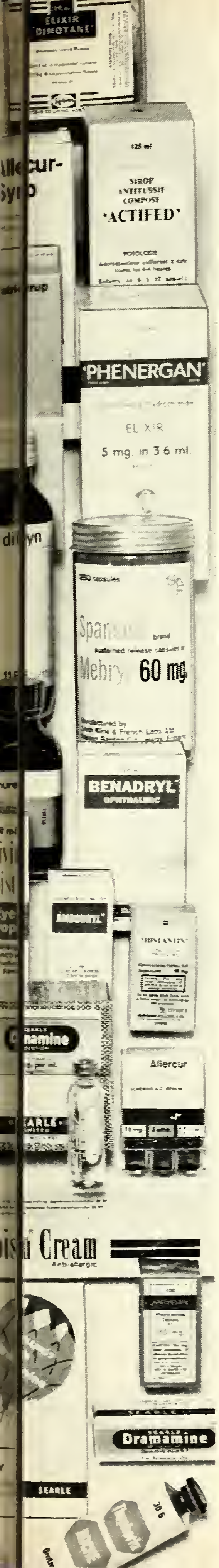
Respect Earned Over the Years

Most hospital pharmacists—probably the majority of them—can and do exert a considerable influence on prescribing simply because they have, over a number of years, earned the respect of their medical colleagues. Even so there can be few who do not feel that they could do much more if only they were recognised as experts in their own subject of pharmacy. All of us at some time or other have found ourselves in an invidious position when what we thought was our authority has been openly challenged. On such occasions all we can usually do is to give in, retire into a corner to lick the injury to our pride and ask ourselves whether it is all really worth while.

In circulars advising hospital authorities of the need to control drug costs the Ministry always takes good care to remind them that the doctor must always remain the final arbiter of the drug or preparation to be supplied. The pharmacist may be permitted to prepare "charts showing the different costs of alternative treatments" (HM(61)75) provided, of course, that the medical staff are free to ignore them if they choose to do so.

No Surprise That They Look Elsewhere

In such circumstances it is not surprising to find that hospital pharmacists are continually on the look-out for new fields to conquer. Pharmacy, they realise only too well, is not likely to bring them the status accorded to those with authority to make decisions. But, as was the case with Central Sterile Supply Departments, and now in the field of clinical pharmacology, once they step outside their own specialty rival claimants appear on the scene. Pharmacy, let it be said once again, is the real province of the pharmacist, and it is high time he put up a fight for the recognition of his expertise. He is at least entitled to demand the right to decide how the drug chosen by the doctor should be presented. It would of course be difficult to argue that only pharmacists who happen to work in hospitals should have that right. In order to be successful the demand must be supported by the profession as a whole, as being the elementary right of all pharmacists, and it is doubtful whether support on that scale could be expected. In fact, there might even be some opposition. If we are divided amongst ourselves then we shall never be able to persuade the medical profession to relinquish its stranglehold over pharmacy and so allow the pharmacist to do the job for which he is trained. It is no use hoping that one day something is bound to turn up. Time is slipping away rapidly, and unless we put up a fight it will soon become impossible to distinguish pharmacists from pharmacy technicians. There are some who would say that the battle is already as good as lost. If it is, then it is time to look at the pharmaceutical curriculum and ask ourselves what it is all about.



ANTIHISTAMINES

Their development over a period of twenty-five years

SINCE THE FIRST COMMERCIAL PRODUCT WAS DESCRIBED

IN THE BEGINNING . . .

A HISTORY OF THE ANTIHISTAMINICS

"He doth sneeze as oft as any place is Swept, or the Wind doth stir up the Dust, even so when he eateth Fishes in Oyl"

(Van Helmont 1577-1644 describing an allergic monk.)

SINCE ancient time it had been suspected that some diseases were related and that there were within the bodies of animals certain glands that possessed toxic or curative properties.

Such substances of widely differing structural and pharmacological activities have been collectively described as autacoids. This term, proposed in 1916 by Sir Edward Schäfer, marked an attempt to designate and embrace those natural compounds which had been described previously as "local hormones" or "autopharmacological agents." Histamine and its modern antagonists, the antihistaminics, represent such members of this group and although histamine remained undiscovered until the beginning of this century, conditions due to its pharmacological activity can be found in references as early as the Scriptures.

Hippocrates wrote of urticaria or hives in victims bitten by mosquitoes and he observed that stomach upsets often accompanied the acute irritation. In ancient Rome, in the year 2 A.D., the physician Galen wrote of individual cases of sneezing and wheezing after exposure to roses or cats: his contemporary Aretaeus was the first to describe paroxysmal, recurrent headaches which were often one-sided and accompanied by nausea and vomiting. Some of the earliest descriptions of hay-fever cases have been attributed to Leonard Botallus, a physician of Padua (1565) who said of the condition — "I know men in health, who, directly after the odour of roses, have a severe reaction from this, so that they have a headache, or it causes sneezing, or it induces such a troublesome itching in the nostrils that they cannot, for a space of two days, restrain themselves from rubbing them." In 1607 Van Helmont, a Flemish doctor, described summer attacks of asthma, or pollinosis as we know it today, which are due to the pollen of grasses and other common plants, often without odour or the distinction of colour, and therefore unsuspected. Roses have seemed always the popular exception and Johann Binniger in 1673 described a patient who "suffered from a coryza many weeks at the season of roses."

In the middle of the 19th century, Trousseau used the term "exudative diatheses" and he regarded asthma as part of a "diathetic neurosis" in which other diseases also existed including exzema, urticaria and periodic headaches. He called the relationship "familial" and Trousseau's conception of a linked relationship continues the theme of some elusive common factor which was responsible for the precipitation of such ailments. A wide variety of preventives for the allergic conditions was proposed; a popular(!) 17th century cure was arsenical cigarettes "used with care — a few puffs at a time."

The Archbishop's Asthma

Carden, a 17th century physician, is reported to have cured the chronic asthma of John Hamilton, an Archbishop of Scotland. His Grace was a man inclined to much eating and drinking, who kept late hours and took no exercise. Carden prescribed a varied treatment which included shower baths, regular exercise, two frugal meals and a quart of milk daily. "To purge the humours of the brain," Carden applied milk and water and elaterium through the Archbishop's nostrils but one of his most interesting directions, and probably the most important, was that the Archbishop should not sleep on feathers "for they heated the spine" and that, further, his patient's pillow should be of linen, and not leather and that it should be filled with straw. The Archbishop's condition improved — needless to say, not from purging, exercise and frugal meals, but by his avoiding feather beds.

The modern scientific interest in allergy probably begins with Bostock's summer catarrh. The concept of allergy was becoming established and in 1819 Bostock, a London physician, described his own seasonal catarrh of the nose —"tightness of the chest and difficulty of breathing where there is no absolute pain in the chest but a feeling of want of room to receive the air necessary for respiration."

Twelve years later Elliotson noticed that hay-fever was caused by the blossoms of graminaceous plants — "it appears that the affection does not take place until the grass comes into flower, and as long as the flower on the grass remains, so long does the disease continue." Elliotson also observed a patient who "on handling the flowers of the grass, her hands always became instantly inflamed; therefore there is clearly in her skin a peculiar susceptibility of irritations from the flowers of the grass. I presume that the same morbid state exists in the mucus membranes of the air passages . . . that it produces a running of the eyes and a soreness of the upper lip." In the first edition of "Principle and Practice of Medicine," Osler writes of a similarity between hay-fever and asthma and remarked "that these diseases have the same origin but differ only in site." The concept of allergy was now established and a search for the elusive common factor in the allergic diseases was mounted, together with research into a possible antagonist.

Histamine, β-imidazolylethylamine, was synthesised merely as a chemical curiosity by Windaus and Vogt in 1907; three years later Barger and Dale, who were looking for uterine stimulants in extracts of ergots, isolated extracts of histamine in pure form. They assigned the name "ergamine" to the compound and it was shown that histamine was not a specific principle of the ergot but a casual contaminant due to bacterial activity in which histidine was decarboxylated.

Dale and Laidlaw (1911) drew attention to the fact that the pharmacological activity of histamine resembled that of many tissue extracts and that the immediate symptoms with which the animal responds after injection of a normally inert protein, to which it has been sensitised are, to a great extent, due to the effects of histamine. It is a tribute to their work that their comments and observations anticipated by many years the events which were to thrust histamine and its association with allergy, asthma and anaphylactic shock, to the very centre of physiological interest. Best and his colleagues (1929) demonstrated the presence of histamine in many different tissues, all of which show variation in the total histamine content, and they demonstrated further the presence of a specific enzyme, histaminase, which *in vitro* is capable of inactivating histamine and thereby blocking the pharmacological responses to it. Hopes were raised that this would prove useful in the treatment of allergies but beneficial results could not be reproduced dependably in the allergic patient. Hagen *et al* regarded histamine as "bound," in some special way, to the tissue cells. They showed that it is not bound to a tissue component by a primary chemical bond but, rather, that histamine is enclosed in a diffusible form within mitochondria-like particles. Therefore, a change in the properties of the particle-cytoplasm interface would allow histamine to diffuse out. Histamine occurs in two forms: as free histamine which is located within most tissue cells or inside mitochondria or other intra-cellular particles and as an acetyl derivative — though only small quantities of the latter can be found in the tissues.

Histamine has little or no therapeutic value. It is associated with all the respiratory allergies in which the most important causes are environmental antigens such as house-dust, fur, feathers, food and emotional stress; in asthma it is one of the factors causing the most serious of the asthmatic syndromes — recurrent attacks of dyspnoea of the wheezing type resulting from a narrowing of the lumen of the bronchioles. In cases of allergy to food, histamine promotes vomiting, nausea, and may induce angioneurotic oedema, for example, of the lips and mouth. It may be involved in the production of persistent headaches, and of nausea — as in migraine and the cerebral hemiplegias. Subcutaneous injection causes hives or urticaria and elicits the familiar "triple response" while intravenously, histamine gives a precipitous fall in the blood pressure, markedly stimulates gastric, and to a lesser extent some other secretions; the uterus may contract.

When the effects of histamine were demonstrated in experimental animals it could be seen that the earlier thinkers had not been very wrong in their concept of a relationship between some diseases, but a quarter of a century was to elapse before significant histamine-blocking drugs were discovered. Amino-acids such as histidine, cysteine and arginine have a certain antihistamine activity but this is insufficient to be of value clinically.

Histamine Antagonists

In 1930 the Japanese workers, Annau and Okasake, who had been studying thymoxyethyldiethylamine, demonstrated that it had oxytocic and sympatholytic properties but it was Fourneau and later Bovet and Staub in 1937 who showed that such phenolic ethers were antagonistic to histamine *in vitro* and *in vivo* and this led to the preparation of a whole range of more active products (*C.R. Soc. Biol.* Paris — 1937). At that time the compound 929F (thymoxyethyldiethylamine) showed the most activity and Staub and Bovet, continuing their work at the Pasteur Institute, demonstrated the anaphylactic shock in guinea pigs. Four years later Climenko, Homburger and Messer showed that 929F would protect guinea pigs from twice the lethal dose of histamine-induced spasms of various smooth muscles and, most significantly, lessened the symptoms of anaphylactic shock.

However, 929F and other phenolic ethers of amino-alcohols were proving to have significant toxicity and an investigation of the diamines began. In 1939 Staub reported her results; the most effective diamine was 1571 F (N-ethyl-

N'N'-diethylethylenediamine). This was shown to have both antihistamine and anti-anaphylactic properties and although it had no effect on histamine skin reactions, it protected guinea pigs against six times the lethal dose of histamine (Wilcox and Segal - 1942). However, it too, was abandoned because of its toxicity.

In 1942 Halpern announced the development of two new synthetic antihistamine agents, 2325 RP (dimethylaminoethylaniline) and 2339 RP (Antergan-dimethylamino-ethylbenzylaniline) (*Arch int. Pharmacodyn.*-1942). 2339 RP proved to be a very effective antihistaminic with an activity fifteen times greater than that of 2325 RP which, in turn, was ten times more active than 1571 F. Antergan was used clinically in France but Halpern's discovery was not widely known until 1945. By this time Halpern had developed a more potent, more specific and less toxic antihistaminic, 2786 RP (mepyramine, Neoantergan or Anthisan). Mepyramine continues to be widely used today, its rapid onset of action and its specificity being outstanding. In 1946 Halpern, together with Homburger and Debrey, investigated a series of synthetic phenothiazine derivatives, some of which possessed potent antihistamine properties. The most active were 3015 RP and 3277 RP (promethazine or Phenergan). Phenergan was found to be the more promising experimentally as it would protect guinea pigs against 1,500 lethal doses of histamine. It is still one of the most widely used antihistaminics.

The development of mepyramine took place in wartime France and after the war this research was continued in the laboratories of Rhône-Poulenc. Across the Atlantic in America the original Fourneau compounds were investigated and this work resulted in the introduction of pyribenzamine and diphenhydramine, both of which have been used widely.

"Miracle" Drugs

Many derivatives of these compounds were synthesised and it became evident that such substances frequently possessed antihistamine activity. The lay public delighted in the new miracle drugs which appeared to cure, as Goodman and Gillman state, "everything from chilblains to a cold in the head and encouraged the drug manufacturers to a frenzy of syntheses."

It was now evident that besides antihistamine activity, the new drugs also possessed anti-acetylcholine, local anaesthetic, and sympatholytic action and a drug such as Phenergan is used for premedication in anaesthesia; this application utilises its sedative and antihistamine effect and its property of potentiating the actions of hypnotics and anaesthetics. Even more important, its anti-emetic action is of value in reducing the risk of post-operative vomiting caused by anaesthesia and manipulations during surgery.

Antihistaminics were found to act as antagonists to adrenaline and it was also shown that promethazine hydrochloride possessed local analgesic activity three times greater than that of procaine. The increased capillary permeability and oedema produced by histamine could be opposed by antihistamine drugs. Winter (1948) observed the effect of antihistaminics on the waking time in experimental animals given doses of barbiturates. He found that all the antihistaminics examined potentiated the hypnotic action of the barbiturates, and that this effect was most marked in promethazine hydrochloride. A number of antihistaminics have been successfully employed in the prevention and treatment of nausea and vomiting, especially that of pregnancy and of travel sickness, and promethazine theoclate (Avomine) has been so used for almost twenty years.

A drug may inhibit the action of histamine at the tissue receptors; available evidence suggests that antihistaminics antagonise histamine by competing with it for tissue receptors, thereby blocking the pharmacological responses. The production of histamine is not prevented by the introduction of the antihistamine drug: the allergic and anaphylactic tendencies will persist in spite of the treatment which must be continued either indefinitely or until the allergy or anaphylaxis has subsided spontaneously or as a result of desensitisation. The best remedy, it seems, even if it is not always possible, is still the observance of Van Helmont's instructions to his afflicted monk — avoidance of the precipitating factors.

In general medicine, in psychiatry and in anaesthesia, the antihistaminics and especially the phenothiazine derivatives, have proved useful for a wide range of purposes, including relief of the allergic sensitisations, especially of the exudative type (vasomotor rhinorrhoea), some cases of simple allergic asthma, motion sickness, vertigo and Ménière's syndrome, chilblains and oedema as well as insomnia. They are also administered to overcome the sensitisation effects of certain drugs, penicillin and other antibiotics, so that treatment may be continued without provoking such effects. Promethazine is used in minor mental and emotional disturbances and to enhance the effect of central depressants. In the course of antigen-antibody reactions, protection by antihistamines is not so effective, because other active metabolites besides histamine are released. These include bradykinin and the slow reacting substance of allergy (SRS-A). Bradykinin resembles histamine in many of its pharmacological effects but SRS-A is thought to produce the slow sustained smooth muscle contraction which is unaffected by antihistaminics. This is, perhaps, a possible explanation of why antihistaminics are not of great therapeutic value where muscle spasm occurs, such as in severe asthma.

A history of antihistaminics cannot be complete without mention of the history of histamine; such an account cannot also be discussed without including the phenomenon of allergy. But the concept of allergy, too, has a history, and although the early practitioners sought anti-allergic compounds, the demonstration that histamine was the "toxic substance in the bodies of animals" and was a precursor of many allergic conditions gave impetus, no longer to the search for anti-allergics, but to a search for antihistaminics.

Twenty-five Years On

THE *thirtieth and twenty-fifth anniversaries of two significant papers in the early history of antihistamine development fall during the first half of* 1967. *It was at a meeting on February* 13, 1937, *recorded in* Comptes rendus de séances de la Société de biologie et de ses filiales, *Paris, that Daniel Bovet and Mlle. A. M. Staub first reported their investigations at the Pasteur Institute into the protective action of a series of phenolic ethers on the course of histamine poisoning. This was a short paper in which the authors classified the ethers according to their antagonism to toxicity of histamine for the guinea-pig. In April* 1942, *B. N. Halpern, who was working in the Rhône-Poulenc laboratories, reported* (Arch. int. Pharmacodyn., **68.** 339) *trials of a series of substituted phenyl-polymethylene diamines in allergic conditions. One of these compounds,* 2339*P* (*Antergan*), *became, in France, the first antihistamine to be marketed for clinical use.*

Since then, the antihistamines have been in and out of favour, with medical opinion frequently divided on their merits. Poisons legislation has ebbed and flowed but the current tide seems against them as the Poisons Board seeks a fourth schedule, and the Pharmaceutical Society's Council a first schedule, classification. In the face of controversy, the antihistamines would seem to be a perfect case for exercise of the pharmacist's "discretion."

CLINICAL ASPECTS OF ANTIHISTAMINE THERAPY

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ANTIHISTAMINES are synthetic antagonists of histamine with which they share a basic substituted ethylamine structure. Their primary pharmacological action is to block histamine at its cell receptor sites by competition[1]. They do not prevent the release of histamine from damaged cells but oppose its important pharmacological effects namely spasm of smooth muscle, increased capillary permeability and peripheral vasodilatation. Comparisons between antihistamines may be made from their ability to reduce the flare and weal of intradermal histamine or their protection of sensitised guinea pigs exposed to histamine aerosols. In general, the intensity of allergic and anaphylactic reactions is reduced but gastric acid secretion is not blocked, which is why antihistamines may be used to block the side effects of the augmented histamine test meal for achlorhydria. Transient vagal inhibition occurs with intravenous antihistamine injections[2].

Depression of the central nervous system produces drowsiness, which is especially marked with the derivatives of ethanolamine. Anti-emetic properties are characteristic of the piperazines and phenothiazines. These central effects may be due to antagonism of acetylcholine or of histamine but some compounds also antagonise serotonin and protect animals against experimental drug-induced depression[3]. In conventional dosage antihistamines may cause central nervous stimulation producing restlessness, nervousness, or insomnia, and epileptic attacks can be evoked in patients with focal cortical lesions[4].

The atropine-like effects are used to reduce secretions but may also cause blurring of vision, gastrointestinal symptoms due to bowel spasm, a dry mouth, dysuria associated with bladder spasm, or impotence. Slowing of the heart and prolongation of the atrial refractory period occur and hypotension following rapid intravenous injections probably results from blocking the action of histamine on the adrenal medulla. Local anaesthetic properties are possibly explained by anticholinergic action. A reported ability to act as sun-screening agents is disputed.

Most antihistamines have a rapid action commencing thirty minutes after oral administration, their effect lasting up to twelve hours in the case of pyrrobutamine or triprolidine. This may be extended to twenty-four hours by means of layered or slow release preparations. Some compounds have a bitter taste while others like triprolidine are almost tasteless. After conjugation in the liver most of the drug is excreted in the urine and bile, some being metabolised in the lung and kidney.

Side Effects

Drowsiness may occur with any antihistamine but a low incidence is claimed for chlorpheniramine[5]. Depression, narcolepsy, and nausea are infrequent. Reaction times have been found unimpaired after triprolidine even in drowsy subjects[6] and studies using a Miles trainer after mebhydrolin confirm that[7]. Dependence does occur[8]. Accidental overdosage produces features of atropine poisoning in children, together with athetosis, convulsions and coma. In adults, hallucinations may predominate. Fortunately leucopenia, agranulocytosis, and thrombocytopenia[9] are rare but haemolytic anaemia has also been reported[10].

The danger of dermatological complications following topical application has been inadequately appreciated. In addition to light sensitive eruptions[11] there is a risk of cross-sensitisation to drugs of quinonimine structure including analgesics, anthelmintics, antiseptics, antibiotics, diuretics, and hair dyes[12]. Oral or parenteral administration may cause chronic dermatitis or light-sensitive skin rashes[13].

Though many antihistamines had been administered during the pregnancies studied, they were not considered to be the cause of a rise in congenital abnormalities of the lacrimal passages in Southern Finland since 1959[14]. Antihistaminic constituents of proprietary mixtures sold without prescription may potentiate tranquillisers and this has led to cases of accidental overdosage in America[15].

Skin Diseases

Urticaria responds well to oral therapy, provided adequate doses can be tolerated. Giant urticaria responds less well. Treatment is more likely to be successful in cases of eczematous dermatitis where the lesions are complicated by dermal oedema because dermal, rather than subcutaneous swelling, is more readily reduced[16]. Chronic urticaria, atopic dermatitis, contact dermatitis, and the itching pruritides respond more irregularly than dermatographism. Antihistamines interfere with skin testing, and should not be given for non-urticarial rashes for which they are ineffective. Symptomatic relief may be obtained where urticarial lesions are produced by drug reactions, serum sickness, or vaccination[17]. The sedative effect of antihistamines is often more important than their antipruritic effect and topical application is difficult to justify owing to the risk of drug-induced dermatitis.

Anaphylactic Reactions

Parenteral antihistamines produce great symptomatic relief in these conditions although they are not the most rapidly acting and therefore the most immediate treatment. Care must be taken not to give the intravenous injections too rapidly since hypotension may lead to circulatory collapse. Chlorpheniramine has been successfully used to protect penicillin sensitive patients by mixing the antihistamine with the injection[18]. Intravenous chlorpheniramine given to 6,000 patients undergoing intravenous pyelography reduced the incidence of mild and severe allergic and non-allergic reactions in comparison with a control group[19].

Allergy

Seasonal hay fever responds well to most antihistamines, sneezing and rhinorrhoea usually improving more than the nasal obstruction and headache. For this reason many proprietary mixtures include a sympatheticomimetic amine to help reduce mucosal oedema. A pure antihistamine such as chlorpheniramine appears to be as effective in hay fever as cyproheptadine which has additional anti-serotonin properties[20]. Seasonal differences are important as has been shown in the treatment of ragweed pollinosis in America where chlorpheniramine was the most effective agent tested in one double blind study[21].

Perennial allergic rhinitis is often associated with an allergy to house dust and responds less readily. Diphenylpyraline produced excellent or moderate relief in forty-four of fifty-eight patients with this condition but a placebo also relieved four of twenty-one patients in the control group[22].

Bronchial asthma unfortunately responds poorly to antihistamines even though they successfully antagonise the action of histamine on human bronchial muscle *in vitro*. The occasional success may be associated with their sedative effect in the absence of central respiratory depression, or with their use in combination with sympatheticomimetic drugs. Promethazine and atropine were the active constituents in "asthma cigarettes" reported to have had some success in France[23].

Gastrointestinal allergy and functional bowel disorders occasionally symptomatically improve with oral antihistamines[24].

The common cold is symptomatically relieved by drying up bronchial secretions, by nasal decongestion and by the reduction of nasal secretions and post-nasal drip. These, however, are the only effects of antihistamines in this condition[25].

Bites and Stings

Oral or parenteral diphenhydramine symptomatically relieves the allergic manifestations of insect bites and bee or wasp stings[26], and a double-blind placebo-controlled trial on American military personnel has demonstrated the effectiveness of chlorcyclizine in the prophylaxis of itching from mosquito bites[27]. Most cases of adder bite are mild and without generalised toxic symptoms but the local swelling and irritation can be alleviated by antihistamines. They are not the immediate therapy for the severe cases presenting with peripheral circulatory failure requiring emergency treatment[28]. A review of the treatment of snake bite in India suggested that the value of antihistamines was inconclusive[29]. In different parts of the world, oral or parenteral therapy has been found useful in the treatment of a number of local hazards including ivy poisoning.

Anti-emesis

A valuable property of the piperazines, phenothiazines, and ethanolamine derivatives is that they may be used for the symptomatic relief of nausea and vomiting of most causes. The substituted ethanolamines diphenhydramine and dimenhydrinate are popularly prescribed for motion sickness even though they cause drowsiness in approximately 50 per cent. of cases. The importance of motion sickness in space travel is indicated by the Gemini V astronauts including cyclizine hydrochloride in their spacecraft medical kit[30]. These drugs are also effective after fenestration operations or for the relief of labyrinthitis. Postoperative nausea and vomiting and that associated with digitalis therapy, acute post-alcoholic states, uraemia, and radiation sickness have responded to the use of the anti-emetic properties[31]. Cyclizine has controlled nausea and vomiting following morphine administration to volunteers[32] and the two drugs are used in combination in Britain and Australia.

Antihistamines are employed with some success in controlling the vomiting of pregnancy but most clinicians avoid prescribing any drug in the early months of pregnancy if possible, even though these have not been shown to be teratogenic in human subjects.

Other Uses

In conventional dosage the drowsiness produced by antihistamines is not accompanied by central respiratory depression. They are therefore useful sedatives in very young and very old patients and have been used to sedate children prior to electro-encephalography[33]. Patients with Parkinsonism who cannot tolerate benzhexol may prefer the weaker atropine-like effect of antihistamine therapy[34]. In this condition antihistamines decrease rigidity and improve both speech and spontaneous movement. The rigidity of drug-induced Parkinsonism accompanying phenothiazine therapy is reduced by diphenhydramine[35].

Attempts have been made to use the vagal action of antihistamines on the heart in the treatment of cardiac arrythmias. Oral antazoline in daily dose of 300-800 mgm. restored regular rhythm in approximately half the number of patients with auricular fibrillation and paroxysmal supraventricular tachycardia in a small uncontrolled study[36]. This experience was not confirmed when intravenous antazoline was used to treat five patients. Two patients with auricular fibrillation developed ventricular tachycardia[37]. These authors concluded that auricular flutter and auricular fibrillation may complicate intravenous antihistamine therapy more frequently than is recognised.

In the treatment of night cramps, antihistamines have been found as effective as quinine[38]. This has been attributed to a direct muscle relaxant action. Reduction in pain swelling and trismus following oral surgery was noted after preoperative tripelennamine when a combination of pyrrobutamine, thenylpyramine, and the sympatheticomimetic amine cyclopentamine hydrochloride was given postoperatively[39].

Choice of Antihistamine

The wide variety of available compounds reflects both their demand and the difficulties underlying their clinical evaluation. Many double-blind placebo controlled trials fail to provide satisfactory results because the preparations are given in insufficient or disproportionate dosage. Tolerance is so common[40] that successive preparations may appear more effective than the original therapy. It is impossible to predict the individual success of a given antihistamine in any particular patient since this will depend on his susceptibility to unwanted effects, tolerance and idiosyncrasy. The stage at which the condition is treated may be as important as the possibility of remission and the degree of immunity. Moreover, allergic conditions are readily influenced by geographical, seasonal, and weather changes. A therapeutic trial involving several different types of compound may be required in the satisfactory treatment of the individual. Mixtures of antihistamines or rotation of several drugs may overcome the diminishing effectiveness of the therapeutic response.

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CHEMISTRY OF ANTIHISTAMINES

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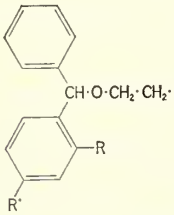
THE idea of a special class of substances which specifically antagonise the effects of histamine arose from the observations of Ungar, Parrot and Bovet in 1937 that certain α-adrenergic blocking agents of the phenylalkylamine type also antagonised the effects of histamine. Further work by Bovet and his colleagues at the Pasteur Institute led to the discovery of another class of potent antihistamines, the ethylenediamines. The fact that such specific antagonists existed stimulated world-wide research to find other more specific and less toxic antagonists. A large number of antihistamines are now known and they may be grouped into four main chemical classes:— Basic ethers, ethylenediamines, propylamines and phenothiazines.

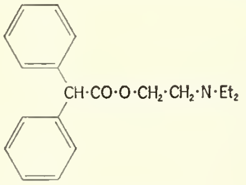
Not all the pharmacological effects of histamine are antagonised by antihistamines—the histamine-induced secretion of gastric juice, for example, is not inhibited. The antihistamines act by competing with histamine for receptors on the effector cells, for which they have a greater affinity than histamine itself. They possess in varying degree other actions, particularly on the central nervous system, which are unrelated to the antihistaminic property. With the exception of phenindamine, all exert a sedative effect, particularly the basic ether type, but poisoning with antihistamines produces excitation of the C.N.S. which may result in convulsions. The antihistamine of choice is one that produces the least incidence of side effects, though individual variations in response are a characteristic feature of these drugs.

Basic Ethers

The original antihistamines of this type discovered by Bovet were far too toxic to be used clinically. More potent and less toxic antihistamines were discovered in the laboratories of Parke Davis & Co. in the United States. Diphenhydramine is the oldest and best known of this group, having been introduced in 1946. It is dimethylaminoethyl diphenylmethyl ether and has some atropine-like anticholinergic activity like that of diethylaminoethyl diphenylacetate (Trasentin). This anticholinergic activity is greatly increased if the freedom of rotation of the two phenyl rings is restricted by the introduction of an alkyl group into the ortho position of one of the phenyl rings. At the same time the antihistaminic properties are virtually abolished. The larger the alkyl group the greater is this effect (see table 1).



R = R′ = H Diphenhydramine
R = H R′ = Br Bromodiphenhydramine



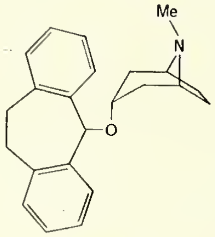
Trasentin

TABLE 1: RELATIVE POTENCY OF ORTHO-SUBSTITUTED DIPHENHYDRAMINES

R =	H	Me	Et	i-Pr	t-Bu
anticholinergic	1	2·1	4·2	6·5	33
antihistaminic	1	0·2	0·1	0·1	0·05

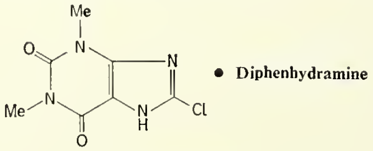
On the other hand a methyl, chlorine or bromine in the para position of a phenyl ring enhances the antihistaminic activity and depresses the anticholinergic activity. This effect of methyl may be connected with its hyperconjugative effect, since a para-tertiary butyl group depresses antihistamic activity.

Changes in the dimethylaminoethyl group usually lead to less active compounds, but some benzhydryl ethers of cyclic amines are effective antihistamines. Deptropine is the tropine ether of dibenzocycloheptadiene and, since it is an antagonist of acetylcholine and 5-hydroxytryptamine as well as histamine, it finds use as a bronchodilator. Quaternisation of the amino group usually reduces antihistaminic activity and enhances anticholinergic activity.



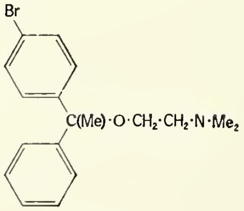
Deptropine

The sedative side effect often noted with this type of antihistamine may wear off. Mild sedation may be overcome with caffeine, but for strong sedation only amphetamine suffices. The duration of stimulation should coincide with the sedative effect, but this may be difficult to arrange from generalisations about the duration of action of each drug, owing to individual variation. Diphenhydramine forms salts with the stimulating purines but only 8-chlorotheophylline is a sufficiently strong acid to form a stable salt. This combination, known as dimenhydrinate, has found use in the control of motion sickness.

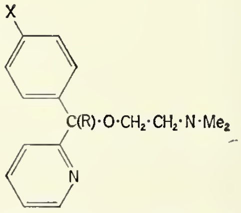


Dimenhydrinate

Substitution of the α-hydrogen of the benzhydryl group by methyl (but not by larger groups) is advantageous for antihistaminic activity, as in embramine, and so is the replacement of one phenyl ring by a 2-pyridyl ring, as in doxylamine and carbinoxamine. Carbinoxamine is said to produce less sedation than doxylamine. In the basic ether type of antihistamine the replacement of a phenyl ring by thienyl is not advantageous.



Embramine

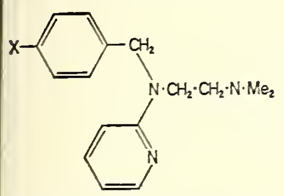


X = H R = Me Doxylamine
X = Cl R = H Carbinoxamine

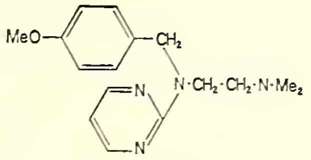
Ethylenediamines

The early work of Bovet and Staub in 1937 revealed high antihistaminic activity in compounds such as F1571

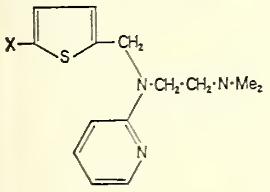
($PhNEtCH_2CH_2NEt_2$). The first useful compound of this type was Antergan ($PhCH_2N(Ph).CH_2CH_2NMe_2$) which was used clinically in France in 1943. It had too many unpleasant side effects to find wide acceptance, and it was soon superseded by Neo-Antergan (mepyramine) and by other related ethylenediamines with a 2-pyridyl group. This 2-pyridyl group can be replaced by 2-pyrimidyl but replacement by 3- or 4-pyridyl leads to loss of activity. A 2- or 3-thenyl (thienylmethyl) group can replace benzyl without loss of activity, and activity is increased by halogen substitution.



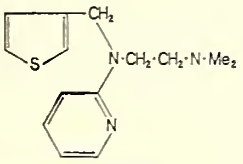
X = OMe Mepyramine
X = H Tripelennamine
X = Cl Halopyramine



Thonzylamine

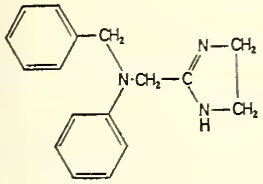


X = H Thenylpyramine
X = Cl Chlorthenylpyramine

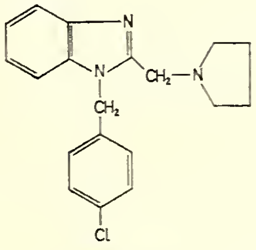


Thenyldiamine

Some potent antihistamines have part or all of the ethylenediamine chain as part of a ring, as in antazoline and clemizole.

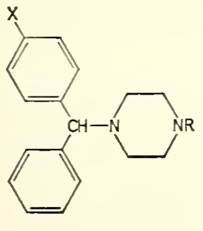


Antazoline



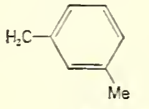
Clemizole

Various benzhydrylpiperazines have the ethylenediamine chain as part of the piperazine ring. The antihistamine effect of this type is slow in onset and particularly long-lasting (chlorcylizine, twelve hours; diphenhydramine, eight hours). Some members of this group are effective against motion sickness, a property that is not general to all antihistamines.



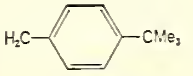
X = H R = Me Cyclizine
X = Cl R = Me Chlorcyclizine
X = H R = $CH_2CH:CH$ Ph Cinnarazine

X = ClR =



Meclozine

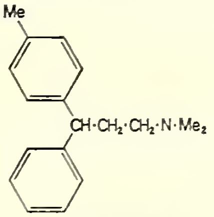
X = Cl R =



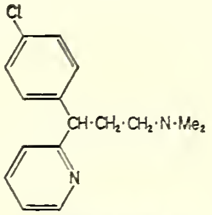
Buclizine

Propylamines and Related Compounds

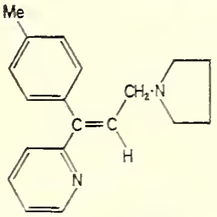
Compounds of this type are among the more potent antihistamines and are less prone to produce drowsiness. Chlorpheniramine has been resolved into its optical isomers and virtually all the activity resides in the dextro isomer. In the diarylpropenylamines, e.g. triprolidine, the most active compounds are those with a pyrrolidine and not the usual dimethylamino group.



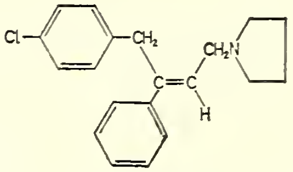
Tolpropamine



Chlorpheniramine



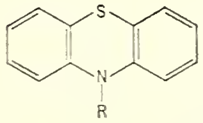
Triprolidine



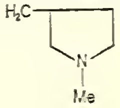
Pyrrobutamine

Phenothiazines and Related Compounds

Among the 10-dialkylaminoalkylphenothiazines investigated at the Rhône-Poulenc Laboratories was the potent antihistamine promethazine, which has an action lasting about fifteen hours. Minor alterations in the side chain of the phenothiazines lead to profound differences in potency and type of activity. The observation that promethazine prolonged the barbiturate-induced sleeping time of mice prompted research that led to the introduction of chlorpromazine and other drugs which revolutionised the treatment of psychoses. The phenothiazines used in psychiatry have a three-carbon chain between the two nitrogens, but one such compound, methdilazine, is an antihistamine and lacks antipsychotic properties.

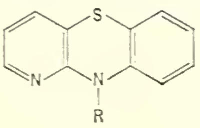


R = CH_2 CH_2 N Me_2
R = CH_2 CH (Me) N Me_2
R =

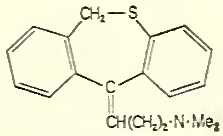


Phenethazine
Promethazine
Methdilazine

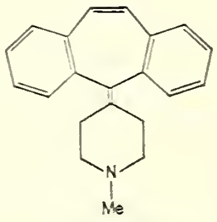
In an attempt to overcome the marked sedative effects of promethazine, a series of quaternary derivatives were pre-



R = CH_2 CH Me N Me_2 Isothipendyl
R = $(CH_2)_3$ N Me_2 Prothipendyl



Prothiaden

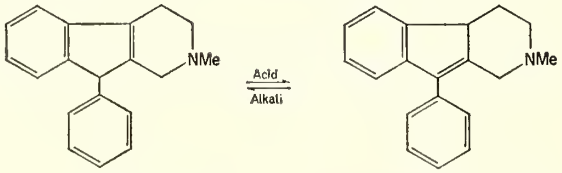


Cyproheptadine

pared since such compounds do not easily pass into the brain. Quaternisation with ethylene chlorhydrin gave a compound with antihistaminic activity comparable with that of the parent compound but devoid of sedative effects. Alteration of the phenothiazine nucleus has produced both antipsychotic and antihistamine compounds. Isothipendyl, with the same side chain as promethazine, is an antihistamine which is not sedative. The same l-azaphenothiazine nucleus with a dimethylaminopropyl side chain as in chlorpromazine is the antipsychotic drug prothipendyl. Prothiaden and cyproheptadine are among more recent antihistamines that fall into this class.

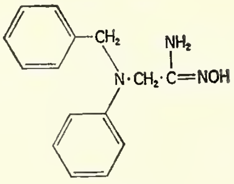
Miscellaneous

Phenindamine has moderate antihistamine activity and is a stimulant of the central nervous system. It is readily isomerised by acid to an isomer which resembles a diarylpropenylamine, but this isomer has only very weak antihistamine properties.

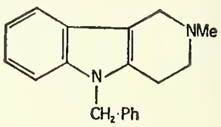


Phenindamine

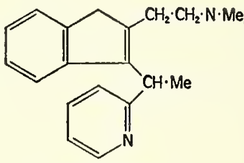
Mebhydrolin is a long-acting antihistamine, Cetoxime (no longer marketed) was claimed to be free from sedative effects and dimethpyrindene is a highly potent antihistamine of particular value in the relief of pruritus. The activity of dimethpyrindene resides almost entirely in the laevo isomer.



Cetoxime



Mebhydrolin



Dimethpyrindene

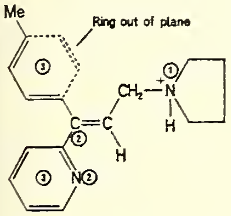
Chemical Structure and Antihistaminic Activity

Histamine has two basic groups: the aliphatic amino of pK_a 9·8, which is protonated at pH 7·3, and the weakly basic imidazole nitrogens of pK_a6. Since the antihistamines compete with histamine for the specific histamine-receptors, then presumably the more active antihistamines also have two regions comparable with the cationic nitrogen and the imidazole ring at a similar distance apart. The electronic attraction of the antagonist for the receptor is reinforced by the van der Waals forces of the large flat aromatic rings,

Approved Name	Trade Name	Chemical Name
Basic Ethers		
Diphenhydramine	Benadryl	*NN*-Dimethyl-2-diphenylmethoxyethylamine hydrochloride
Dimenhydrinate	Dramamine	Diphenhydramine 8-chlorotheophyllinate
Diphenylpyraline	Histryl	4-Diphenylmethoxy-1-methylpiperidine hydrochloride
Deptropine	Brontina	3-(1,2:4,5-Dibenzocycloheptadien-3-yloxy) tropane citrate
Carbinoxamine		4-Chloro-α-2-pyridylbenzyl 2-dimethylaminoethyl ether maleate
Embramine	Mebryl	2-[1-(4-Bromodiphenyl)ethoxy]-*NN*-dimethylethylamine hydrochloride
Ethylenediamines		
Mepyramine	Anthisan	*N*-*p*-Methoxybenzyl-*N′N′*-dimethyl-*N*-2-pyridylethylenediamine hydrogen maleate
Tripelennamine		*N*-Benzyl-*N′N′*-dimethyl-*N*-2-pyridylethylenediamine citrate or hydrochloride
Halopyramine		*N*-*p*-Chlorobenzyl-*N′N′*-dimethyl-*N*-2-pyridylethylenediamine hydrochloride
Thonzylamine		*N*-4-Methoxybenzyl-*N′N′*-dimethyl-*N*-pyrimidin-2-ylethylenediamine
Thenylpyramine (methapyrilene)	Histadyl	*N*,*N*-Dimethyl-*N′*-pyrid-2-yl-*N′*-then-2′-ylethylenediamine hydrochloride
Thenyldiamine	Thenfadil	*N*,*N*-Dimethyl-*N′*-pyrid-2-yl-*N′*-then-3′-ylethylenediamine hydrochloride
Antazoline	Antistin	2-*N*-Benzylanilinomethyl-2-imidazoline hydrochloride
Clemizole	Allercur	1-(4-Chlorobenzyl)-2-pyrrolidinomethylbenzimidazole hydrochloride
Cyclizine	Valoid	1-Methyl-4-α-phenylbenzyl piperazine hydrochloride
Chlorcyclizine	Histantin Di-paralene	1-(4-Chloro-α-phenylbenzyl)-4-methylpiperazine hydrochloride
Meclozine	Ancolan	1-(4-Chloro-α-phenylbenzyl)-4-(3-methylbenzyl)-piperazine hydrochloride
Buclizine	Vibazine	1-(4-t-Butylbenzyl)-4-(4-chloro-α-phenylbenzyl) piperazine hydrochloride
Cinnarizine	Mitronal	1-*trans*-Cinnamyl-4-diphenylmethylpiperazine
Propylamines and related compounds		
Chlorpheniramine	Piriton	1-*p*-Chlorophenyl-3-dimethylamino-1-2′-pyridylpropane hydrogen maleate
Tolpropamine		*NN*-Dimethyl-3-phenyl-3-*p*-tolylpropylamine hydrochloride
Triprolidine	Actidil	*trans*-1-2′-Pyridyl-3-pyrrolidino-1-*p*-tolylprop-1-ene hydrochloride
Pyrrobutamine	Pyronil	1-(4-*p*-Chlorophenyl-3-phenylbut-2-enyl) pyrrolidine phosphate
Phenothiazines and related compounds		
Promethazine	Phenergan	10-(2-Dimethylamino-*n*-propyl) phenothiazine hydrochloride
Promethazine Theoclate	Avomine	8-Chlorotheophyllinate of promethazine
Methdilazine	Dilosyn	10-(1-methylpyrrolidin-3-ylmethyl) phenothiazine hydrochloride
Isothipendyl	Nilergex	9-(2-Dimethylaminopropyl)-10-thia-1,9-diazaanthracene hydrochloride
Cyproheptadine	Periactin	4-(1,2:5,6-Dibenzocycloheptatrienylidene)-1-methylpiperidine hydrochloride
Miscellaneous		
Cetoxime		*N*-Benzylanilinoacetamidoxime hydrochloride
Dimethpyrindene (dimethindene)	Fenostil	2-(1-[2-(2-Dimethylaminoethyl) inden-3-yl]ethyl) pyridine
Mebhydrolin	Fabahistin	9-Benzyl-3-methyl-1,2,3,4-tetrahydro-γ-carboline naphthalene 1,5-disulphonate
Phenindamine	Thephorin	1,2,3,4-Tetrahydro-2-methyl-9-phenyl-2-azafluorene hydrogen tartrate

o that the affinity of the antihistamine for the receptor is greater than that of histamine. Weakly basic antihistamines have weak activity and all the strongly active antihistamines are strong bases. It might be thought that a change in chemical structure would influence activity by changing the basic strenth of the molecule and therefore of the relative proportion of molecule to cation at *p*H 7·3. That is not the only factor involved, since weak antihistamines are known which are strong bases.

Since the activity of chlorpheniramine and dimethpyrindene resides in only one of their two optical isomers. it follows that more than two points of attachment are involved and that the shape of the molecule in three dimensions is an important factor. Some idea of this shape may be gained from that of the more rigid antihistaminic molecules. In triprolidine. for example. the ultra-violet absorption spectrum is almost identical with that of 2-vinylpyridine. while that of its *cis* isomer (not an antihistamine) closely resembles that of *p*-chlorostyrene. From those facts it is inferred that. for antihistaminic activity, the pyridyl ring and ethylene carbon atoms are in the same plane and the phenyl ring is out of the plane.



Hypothetical adsorption of triprolidine
1. Area of ionic binding
2. Areas of electrostatic attraction
3. Areas of van der Waals binding

Most of the potent antihistamines can be fitted into this picture, with the pyridyl ring attached to C. N or O. Isothipendyl also fits the picture, since the three-ring part of the molecule is folded about the S-N axis.

It is obviously not easy to squeeze all the antihistamines into the same mould. It may be that an antihistamine interacts with only part of the receptor, or with a site very close to the receptor, so that it blocks the approach of histamine, and may therefore have little structural relationship to histamine.

DISCOVERIES and DEVELOPMENTS

Manufacturers of antihistaminics and their products

Ideal for Urticaria

BROMPHENIRAMINE, marketed by A. H. Robins Co., Ltd., Foundry Lane, Horsham, Sussex, as Dimotane, is used most commonly as the long-acting preparation Dimotane LA. The compound belongs to the alkylamine group of antihistamines and is not suitable for use where sedation is required. It has one of the highest therapeutic indices (LD50/PD50=1930) of all antihistamines and the range of useful dosage is wide. Experience has shown that the outstanding characteristic of brompheniramine is its effectiveness in the treatment of urticaria—generally a difficult condition to treat with consistent success. Most patients require only one long-acting tablet per day for adequate control of their symptoms.

First Against Motion Sickness

IN 1947 an out-patient attending the allergy clinic of the John Hopkins Hospital, Baltimore, United States, incidentally reported that the new medicine she had been given to try for urticaria had abolished the car sickness to which she had been liable all her life. Research workers at the Chicago headquarters of G.D. Searle & Co. (in Britain at High Wycombe, Bucks) soon established that the observation was no coincidence. The drug she had been taking was dimenhydrinate—made available as Dramamine by Searle in 1949—the first modern therpeutic agent used against motion sickness. Investigations of Dramamine and of the symptoms of motion sickness led to the observation that the origins of a large number of other pathological conditions shared features similar to those of motion sickness, such as Ménière's syndrome, irradiation sickness and vomiting in pregnancy. The new drug was tried in those states and it was soon evident that it had a wider field of application than motion sickness alone.

Action Prolonged

PIRITON (chlorpheniramine maleate) is one of the most potent antihistamines, with an extremely wide margin of safety. It was introduced in tablet and injection form by Allen & Hanburys, Ltd., London, E.2, in November 1955. Like most other antihistamines Piriton has a duration of action of 4-6 hours so it was felt that there was a distinct need for a long-acting preparation that could be administered twice or three times daily. That need was met by the introduction of Piriton Duolets in April 1957. The Duolet is an ingenious tablet containing 4 mgm. of Piriton in the outer core for immediate action, and 4 mgm. in an inner core designed to release the active ingredient three to six hours after administration.

Two "Originals"

AN important contribution to antihistamine therapy was made by Smith Kline & French Laboratories. Ltd., Welwyn Garden City. Herts. with the development of Histryl, first made available in 1957. Histryl introduced diphenylpyraline hydrochloride. one of a new class of antihistamine compounds which offered a high level of antihistamine activity with a very low incidence of drowsiness. Histryl was presented as a Spansule capsule in two strengths, 5 mgm. for adults and 2·5 mgm. for children. This sustained-release formulation eliminated the "peak" blood levels that can occur with tablet medication and gave the added practical advantage of protection against allergic symptoms for up to twelve hours. More recently, in 1963, the company introduced another original antihistamine, mebrophenhydramine (embramine), under the name Mebryl Spansule capsules. Clinical use has shown Mebryl to be particularly useful in the relief of allergic pruritus.

Impressive Relief

DANERAL, marketed by Hoechst Pharmaceuticals, Ltd., Portland House, Stag Place, London. S.W.1, is a versatile antihistamine that has been found of value in all allergic conditions, particularly in hay fever and rhinitis, where the unpleasant symptoms — watering eyes, running nose and sneezing—are quickly and impressively relieved. Allergic skin rashes, e.g. urticaria, also respond well and the annoying itching of pruritis is eliminated. Daneral (pheniramine *p*-amino salicylate) belongs to the alkylamine class of compounds, which are accepted as among the most active histamine antagonists. As they are not so prone to cause drowsiness, they are also particularly suitable agents for day-time use. Relief of symptoms is quickly achieved following administration and continues for about six hours.

Particularly for Day-time Use

UNTOWARD effects associated with the two common groups of histamine antagonists were thought to be closely connected with their chemical structure. Research was therefore instituted to find compounds structurally unrelated to the two groups, but still retaining antihistamine activity. Among the compounds synthesised was Thephorin, which was prepared in the laboratories of Roche Products, Ltd., 15 Manchester Square, London, W.1. Thephorin appeared to be of particular interest because it lacked any sedative effect, in contrast to many other antihistamines. Clinical trials proved that the marked lack of sedation made the preparation ideal for day-time use. It was on the strength of that great advantage that Thephorin was marketed.

Accidental Discovery

ALTHOUGH histamine itself was discovered at the Wellcome Research Laboratories, Burroughs Wellcome & Co., Wellcome Building, Euston Road, London, N.W.1, were late entrants to the antihistamine field, their first product being chlorcyclizine (Histantin) which was synthesised in 1949. A member of the series that includes the anti-motion sickness remedy cyclizine (Marzine), Histantin was something of an accidental discovery in that the research workers were looking for anti-cancer drugs. Histantin is notable for its prolonged action and relative freedom from side effects. Triprolidine hydrochloride (Actidil; Pro-Actidil), the company's other major antihistamine, combines rapidity of onset and high potency with a wide margin of safety. Pro-Actidil is of special pharmaceutical interest, being a three-layer tablet which has an action extending over about twenty-four hours. Triprolidine is combined with pseudoephedrine in Actifed products, the two ingredients having a potentiating effect on one another.

From Two Chemical Classes

TWO antihistamine preparations are marketed by the British Drug Houses, Ltd., Graham Street, London, N.1. Ancolan (meclozine hydrochloride — an ethylenediamine) is an antihistaminic and anti-emetic of low toxicity and prolonged action. It is indicated in allergic conditions, against nausea and vomiting, and has been found useful for the symptomatic relief of Ménière's disease. Dilosyn (methdilazine — a phenothiazine derivative) possesses two areas of activity—exceptional antipruritic effect and high antihistamine potency. It is rapidly and completely absorbed from the gastro-intestinal tract. Following administration there is greater tissue clearance during twenty-four hours than is found with other phenothiazine derivatives and consequently there is less likelihood of cumulation. Peripheral effects are greater than those in the central nervous system as tissue concentration in the brain is insignificant. This effect may be related to the therapeutic potential of methdilazine as an antipruritic and antihistaminic rather than as a tranquillising agent.

Versatility the Keynote

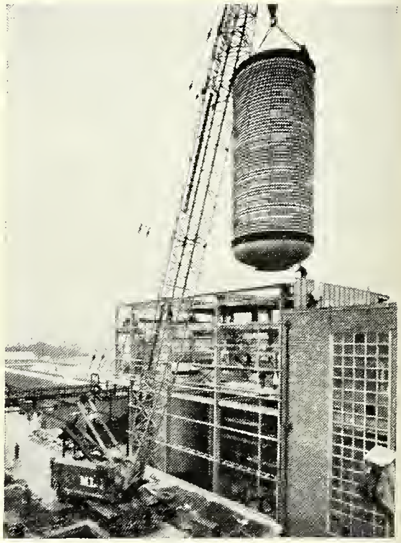
OF the many contributions to medicine from Parke Davis & Co., Hounslow, Middlesex, the discovery and introduction of the potent antihistaminic Benadryl (diphenhydramine hydrochloride) ranks high in order of importance. Synthesised by Rieveschl and Huber in 1945 and its pharmacotherapeutic actions established by Loew *et al.*, Benadryl was the first aminoalkyl ether antihistamine to be introduced into medicine. The clinical efficacy of Benadryl as a potent histamine antagonist with significant antispasmodic action was soon established and a wide range of Benadryl preparations are now available. Its versatility has proved useful in the relief of a number of allergic disorders and in many instances the antispasmodic and/or local anaesthetic actions have contributed to the therapeutic value of this drug. The sedative action of Benadryl is of proven value in children. Ambodryl (bromodiphenhydramine hydrochloride), another member of the aminoalkyl ether antihistaminics, was introduced in 1953. It exhibits high antihistamine activity with a low incidence of side effects.

Staying Power

STRUCTURAL modifications of one of the earliest compounds with antihistamine activity (1571 F) led ultimately to the introduction of mepyramine maleate (Anthisan) by May & Baker, Ltd., Dagenham, Essex. Because of its effectiveness, fairly rapid onset of action and good tolerance, the compound continues to be widely used. Anthisan cream combines the analgesic antipruritic properties of mepyramine maleate with the soothing and mildly astringent properties of zinc oxide for the relief of sunburn, insect bites and stings, jelly-fish stings, nettle stings, prickly heat, urticaria and minor pruritic conditions. Shortly after the second world war the company introduced Phenergan, one of the most successful and most potent of the phenothiazine derivatives with antihistamine activity. It has prolonged action, possesses considerable sedative activity, and has local analgesic and some anti-adrenaline and atropine-like actions. Promethazine is also used as the theoclate salt in Avomine for prevention and treatment of motion sickness and nausea and vomiting in pregnancy. The sedative effect of promethazine is used with benefit in Phensedyl, a cough preparation containing ephedrine and codeine. Vallergan (trimeprazine tartrate) is a phenothiazine derivative which possesses a greater degree of antihistamine and sedative activity than promethazine and, further, it has a marked anti-serotonin action. These pharmacological properties have led to use of the product as an oral anti-pruritic and for pre-anaesthetic medication.

Among the First

RESEARCH by Meischer *et al.* in 1939 in the CIBA research laboratories led to the synthesis of 2-phenylbenzylaminomethylimidazoline, a substance exhibiting antihistamine properties. Marketed later as Antistin by CIBA Laboratories, Ltd., Horsham, Sussex, it was found to be effective in a wide range of allergic conditions including allergic rhinitis, urticaria and allergic dermatoses. Further research led to the development in 1945 of Pyribenzamine, an ethylenediamine derivative with more potency and less toxicity than other antihistamines of the same chemical group. Following observations that the use of both Antistin and Pyribenzamine increased the total percentage of patients obtaining symptomatic relief in allergic conditions, Dibistin, a combination of the two antihistamines, was introduced. In the field of nasal allergies specifically, two products are at present in use, Antistin-Privine and Otrivine-Antistin, both incorporating a vasoconstrictor. An eye-drop formulation of Otrivine-Antistin has now extended use of the combination to allergic conjunctivitis.



THE BIG LIFT: As part of £1-million expansion programme to greatly increase antibiotic production capacity, Dista Products, Ltd., at Liverpool are installing six new 50,000 gall. capacity fermenters, in a specially built fermentation house. By applying the latest techniques of critical path analysis to complete the project quickly, construction of the building advanced whilst the manufacture of the fermenter vessels themselves was in progress at Rochester. It therefore became necessary to drop some of the vessels into position through the roof of the near-completed building as seen above.

Economics of the Pharmaceutical Industry

ITS PRICES AND PROFITS; ITS PROMOTION OF SALES

AT the third in the series of lectures organised by the Office of Health Economics on the economics of the pharmaceutical industry two papers were presented. Messrs. Gordon Fryers and Michael Lee discussed “Prices, Profits and Innovations” and Mr. G. Teeling Smith “Problems of Sales Promotion.” Their contributions are here given in shortened form.

CONCEPT OF “SUBSTITUTE” COMPETITION

The pharmaceutical industry is characterised by a high level of research expenditure and a fast rate of innovation leading to rapid obsolescence of existing products. The industry is therefore highly competitive, but in products rather than in prices. The history of therapeutic advances in chemotherapy is of the dramatic emergence of a single new product that dominates the scene for a while but is rapidly matched and often superseded. Competition within the industry is best described as “substitute” competition, the direct result of research developments made by an initial innovating firm or its competitors, a reflection in turn of research expenditure. Since that must in the long term be linked to returns from sales and profit margins, prices, profits and competitive innovation are seen to be intimately linked. Indeed price competition, so far as it reduces the revenue flow required to sustain expenditure necessary for research and marketing, is inimical to substitute competition and to a high rate of industrial innovation.

The picture contrasts sharply with earlier appraisals of the industry's operations, under which it was judged almost entirely in terms of how effectively price competition operated. The Kefauver inquiry, and other similar studies led to recommendations and actions designed to pivot competition around prices.

The problems, relevant over the range of science-based industry, are critical to the future economic growth of Britain. Chances for growth in world trade of new products are for obvious reasons far better than in long-established commodities. The nations that benefit most greatly from it are those whose industries are most adept in the field of substitute competition. Throughout the whole range of its science-based industries Britain faces severe substitute competition from other developed economies.

A far better understanding of the subject by politicians, administrators and the public is needed if Britain is to sustain or to increase the current rate of economic growth. Anthony Bembridge in the *Observer*, wrote recently:—

> No one would expect big business in Britain to beat the lush returns earned in America; it is not because the Americans necessarily make better managers. The fact is that in Britain more of the benefits accruing from size tend to be passed on as lower prices to the consumer rather than retained as extra profit. There is also a reluctance to take advantage of fluctuations in supply and demand. In periods of short supply, rationing is more often by long delivery dates than by price. There is a built-in resistance in Britain against charging what the market will bear.

The choice before Britain is between a low-price, low-cost and low-wage and profit economy, and a high-price, low-cost, high-wage and profit economy. There is little future for her in attempting to compete in low prices and low costs—“a kind of western Hong Kong” —unless Britons work as hard for as little as do workers in Hong Kong.

The Models

In this study innovation is considered as a single continuous process from the discovery, through the laboratory and clinical testing, through pilot-plant production and product developments to the final stage of factory development and marketing. From the standpoint of the workings of substitute competition an innovation has no current value until it has been successfully marketed. It is artificial to divide arbitrarily the interrelated processes of research, development and marketing.

The relationship between prices, profits and innovation, is shown in the simplified models of firms in Table 1. Three models have been constructed which show the essential differences between a non-innovating, and innovating and what may be termed a “super-innovating” firm. The first, trading simply in commodities, is characteristic of the type of firm existing under the discipline of price competition. The second is representative of science-based industry in the long term. The third, the super-innovating company, is in a period of rapid growth following, say, a major breakthrough into a virgin market.

The models are theoretical. The figures are based on actual experience, but are not meant to be typical of the pharmaceutical industry as a whole. The information came primarily from inter-firm comparisons, from U.S.-published accounts, and from Federal Trade Commission reports (the bias towards American sources was unavoidable because, at present, American company accounts give more information than British).

The models are over-simplifications, assuming the companies to operate entirely in pharmaceuticals. The real world is not so tidy. Funds for some pharmaceutical research have come from sales of unrelated consumer products, while the results of research by pharmaceutical companies often find applications in other fields. The model also considers only sales revenue as major source of research and marketing funds, ignoring government subventions or the introduction of new risk capital. But in the long run government subventions for research tend to be conditioned by potential sales revenue in home or world markets, while the possibilities of raising and introducing new risk capital are always governed by sales prospects.

The Tables and What They Show

Table 1 compares the flow and use of sales revenue. Figures are given both in absolute values and as a percentage of total sales revenue. The differences in sales volume may be assumed to come entirely from the different price levels ruling in the three markets. Price levels faced by firm A, the traditional commodity firm, are those set by the normal workings of price competition. The substantially higher price levels per unit for firms B and C reflect the value of their products and the measure of protection they receive either through patents or through the virtual uniqueness of their innovations. The price levels are trade price levels: the price differentials would often become disproportionately greater if distribution costs were added.

Factory cost of sales is then deducted for each firm and the gross margins shown. Factory costs of production are taken as the same in all three. Residual gross margin for firm C (150) is seen to be three times that of firm A (50) though the sales are only twice as high.

Deductions from gross margins to gain net profits are summarised under the headings (1) general administration and marketing, and (2) research and development. Selling and administrative expenses are common to all three firms, but rise steeply in absolute terms for the innovating firms. Research and development expenditure is by definition characteristic of the innovating and super-innovating firms. The level of research and development in the super-innovating is about twice that of the innovating firm. The two deductions give the pre-tax profits. Again because it is a residual calculation, the proportionate differences between the three firms increase. Net profits of the innovating firm are twice as great, and for the super-innovating firm four times as great as those of the non-innovating firm.

The models provide a basis on which to speculate about factors affecting items of expenditure and the interrelations between them.

Revenue

Sales revenue for each firm is the simple product of quantity sold times price. For the non-innovating firm, operating on price competition, the two factors are directly interrelated. For the innovating firms, the major innovational products are assumed to be sheltered from price competition by patent protection, and the quantity sold is only tenuously linked to the price charged. Thus the dominant factors determining revenue are the levels at which prices are pitched and the share of the market obtained.

The freedom to change what the market can bear, and the share of the market captured, are limited by the degree of uniqueness of the product. The major breakthrough into a new therapeutic field has no competitors offering a reasonable substitute and can look to dominate the market in its therapeutic subgroup. The situation is different for the majority of innovations coming from the pharmaceutical industry, with small but worth-while improvements over existing products. Table 2 shows that the majority of such products introduced between 1963 and 1966 were priced to give a treatment cost below the average for others in the same therapeutic group; practically none were pitched outside the prevailing range of prices. Given the existence of comparable substitutes, the share of the market the manufacturer can hope to achieve is limited. It is clearly related to marketing expenditure.

For the non-innovating firm a 10 per cent. saving in factory costs makes a substantial difference to gross profit margin: for the innovating firms it is of proportionately less significance.

Marketing and Research Expenditure

Important to both the innovating and the super-innovating firm, but in different respects, is the marketing budget. Where close substitutes exist, the marketing effort sets the share of the market captured, and therefore the total sales revenue. With a major breakthrough in a new therapeutic field the marketing effort determines the speed at which the product is introduced, and therefore the duration of the time-lag between investment in research and recoupment of returns. Expenditures on marketing and on research are closely related. If expenditure is moved in the direction of research at the expense of marketing, fewer units are sold. With smaller sales, research costs per unit rise, while promotion costs on the whole become lower in absolute terms, though higher in terms of units. The more original the product, the larger the number of units sold for any given level of promotion; the larger the number of units produced the lower the average cost per unit of production and research and development overheads, bonuses from major innovations.

With the major innovation initial research costs are relatively higher but marketing costs lower. With the product representing only a marginal advance research costs are lower but marketing costs higher.

Limitations of Research Expenditure

If there are pressures encouraging concentration on research, are there factors (apart from finance) limiting research expenditure? It has been suggested that the supply of research-trained personnel is a major limitation. In Britain, with a "brain drain" to the U.S.A. the indigenous potential is clearly not being fully used. British companies are yielding to competitive pressures from Amercia for the attraction of those personnel. That in turn flows from the competitive ability of American firms generally and perhaps the higher status of industrial research in the U.S.

Test of the right size of an operation is not the size of a company but its ability to get a significant proportion of the world market for its special products. In a small field a small company can handle the operation. If the costs of marketing are enormously high per unit because there is only one product, that becomes a limiting factor, or tends towards aggregation and large-size units. In pharmaceuticals, where there is a substantial number of specialist markets, there is also obviously scope for a wide range in sizes. A pharmaceutical company can concentrate on a narrow therapeutic field and have reasonable chances of success.

Profitability and Supply of Capital

It would not be unreasonable to assume that, since factory costs are assumed to be similar, the real capital employed by each of the three firms would be uniform. If it is taken as 100, profits in terms of capital employed would be as follows:—

Firm A	Firm B	Firm C
15 per cent.	21 per cent.	32.5 per cent

Current conventions are inadequate for judging levels of profitability. They need to relate profits to risk borne. A firm devoting a major part of its effort to research is more risky than one content to satisfy existing secure markets. If a firm is growing extremely rapidly, its growth cannot be financed internally from sales revenue: the only way to avoid going to the market is to grow slowly.

Taxation

Profits are inseparable from taxation. Table 3 abstracts the tax burden of each firm. It makes immediately apparent the higher absolute and proportionate tax burden borne by the innovating firms. In competition for research peronnel manufacturers in Britain are at a disadvantage to overseas countries because of their more steeply progressive rates of personal taxation on top-bracket incomes. To retain or attract top-flight research staff they need to offer comparable net emoluments after tax. The innovating firm must, in effect, incur high gross salary costs, most of which are consumed by taxation.

Conclusion

The general arguments of substitute competition are persuasive and go far towards explaining the characteristics and problems of innovating firms. The ways in which all the factors interrelate are far from being understood

TABLE 1: FLOW OF REVENUE: INNOVATING AND NON-INNOVATING FIRMS

	Firm A Non-innovating		Firm B Innovating		Firm C Super-innovating	
	£	%	£	%	£	%
Sales	100	100	143	100	200	100
Factory costs	50	50	50	35	50	25
Gross margin	50	50	93	65	150	75
Administration and marketing	35	35	49	34	60	30
Research and development	nil	nil	14	10	25	12·5
Pre-tax profit	15	15	30	21	65	32·5
Corporation tax (40%)	6	6	12	8·4	26	13
Dividends	6	6	11	7·5	22	11
Retained	3	3	7	5·1	17	8·5
Sales growth per annum	7·5%		15%		35%	
Risk rating	*		**		***	

Sources: 1. U.K. Interfirm comparisons.
2. U.S. Annual reports.
3. F.D.C. Pink sheets.

TABLE 2: PRICING OF NEW PRESCRIPTION MEDICINES

Product group	Number of new products	Percentage of new products with prices: Above mean price of existing products	Percentage of new products with prices: Below mean price of existing products	Number of new products priced outside price range of existing products
Broad-spectrum antibiotics	14	29	71	2
Analgesics	13	46	54	1
Cough preparations	13	37·5	62·5	0
Hormones, corticosteroids, anti-infectives—skin	13	54	46	0
Oral contraceptives*	11	9	81	1
Psychostimulants	9	89	11	0
Ataractics and tranquilisers	8	50	50	0
Haematinics	8	0	100	0
Bronchodilators	8	37·5	62·5	0
Diuretics	7	29	71	0
Anti-diarrhoeals and intestinal absorbents	7	14	86	0

* Conovid, with an exceptionally high price, is excluded from the price range of existing products.

TABLE 3: TAXATION: INNOVATING AND NON-INNOVATING FIRMS

	Firm A Non-innovating		Firm B Innovating		Firm C Super-innovating	
	£	Revenue %	£	Revenue %	£	Revenue %
Sales	100	100	143	100	200	100
Pre-tax profits	15	15	30	21	65	32·5
Corporation tax	6	6	12	8·4	26	13·0
Tax on dividends	2·4	2·4	4·4	3·1	9·1	4·5
Schedule E	1·5	1·5	2·4	1·7	4·0	2·0
Total taxation	9·9	9·9	18·8	13·2	39·1	19·5

Source: Table 1.

and it is therefore not possible to stipulate the optimum combination of the various factors. The problem appears to be suitable for investigation by a series of computer-based business schemes. Considering the past contribution of the industry to the health of the nation, there is a long term identity of interest between the industry and the Ministry of Health in the future development of chemotherapy. It should be possible to evolve a realistic policy based upon the special needs of innovating firms operating under the discipline of substitute competition. That should provide a climate conducive to the long-term growth of all research-based industry in Britain and to increase in its stature in world markets.

SEARCH FOR APPROPRIATE PROMOTION TECHNIQUES

IN studying the economics of the research-based pharmaceutical industry it is useful to think of production as being mainly subsidiary to innovation. The corollary is that sales promotion — "the lubricant of change" — has a greater significance for modern medicines than for traditional products.

Special and real problems arise in connection with the marketing of pharmaceuticals. First, there is the question whether the total level of sales promotion expenditures on prescription medicines is correct. Taking market costs to include both advertising and the use of representatives, the prescription medicine industry is found on examination to be well within the range set by other types of manufacturer. Yet it is wrong to regard the whole prescription medicines market as one, in the sense that detergents constitute a single market. Tranquillisers do not compete with cough mixtures, nor antibiotics with diuretics. The waste that must occur in all competitive advertising cannot be related to the total of £10 million or so spent on pharmaceutical sales promotion. Competition, and hence competitive waste, applies only *within* the individual therapeutic groups. Of the total expenditures on direct mail, journal advertising and medical representatives, for different types of therapy, only for antibiotics does that figure exceed £1 million. For hormones, for cough and cold preparations and for psychotropics sales promotion expenditures exceed £500,000; for each of the other therapeutic groups less than half a million. Where only few doctors are potential prescribers it accounts for only a few tens of thousands of pounds. For the four largest categories in terms of sales value (antibiotics, hormones, psychotropics and cardiovascular preparations) sales-promotion expenditure never exceeds 7 per cent. of revenue from sales to pharmacists. In terms of average amount spent on medical representatives, direct mail and journal advertising per prescription written, the figures for 1965-66 show that fivepence per prescription was spent on cold preparations, threepence on hypnotics and fourpence on analgesics. For the remaining classes of product eightpence or more is spent on sales promotion for each prescription written. Comparing selling price and marketing expenditure per prescription clearly suggests the influence of factors such as rate and degree of innovation within a therapeutic group, and the complexity of new treatments. If new products are relatively few, and their use relatively straightforward, sales promotion expenditure may be correspondingly limited, as with sedatives, analgesics and antibiotics. Promotion expenditure on dieuretics (1s. 7d. per prescription), is inflated because hospital sales account for a considerable proportion of the total. There is evidence that sales-promotion expenditure is concentrated more on new than on established products. Facts and figures in isolation do not answer the question how an appropriate level of sales promotion expenditure should be decided for a particular product, a question that tends to be approached emotionally, sales managers often believing that too little is spent, doctors and hostile politicians protesting vigorously about excesses. Sales promotion expenditure is justified for prescription medicines only if — as with other products — it is a sound commercial investment, i.e., if the cash spent on advertising brings back a suitable return in terms of added profit and contribution to overheads, including research. What a product would have earned even if it had received no promotion must be disregarded. For a product without sales promotion there are virtually no sales and no contribution. For an established medicine the calculation is more difficult because an assumption has to be made about the level of sales that would be maintained without reminder advertising. That commercial approach militates against the promotion of older and less effective preparations; it encourages managements to look also at the effectiveness of advertising expenditure. From every point of view ineffective sales promotion is wasteful and undesirable and anything that brings it under scrutiny is in the public interest.

Commercial Criteria

A third consideration is that for any product, a higher price results in a greater profit and contribution to overheads per unit sold. Thus, on commercial criteria, a higher unit price would automatically justify a greater promotion expenditure, a situation that appears to support those critics who claim that unrestricted competition based on innovation (as opposed to price competition) militates in favour of a policy of pricing high so as to provide greater margins to finance sales promotion. In the absence of true price competition, new products might be expected to be introduced at premium prices in order to provide money for heavy advertising campaigns; in turn the price of existing preparations would tend to escalate to allow their advertising to be increased correspondingly. That prediction appears the reverse of the truth, probably because it confuses the absence of true price competition with a complete freedom on initial price setting. Dr. Fryers and Mr. Lee have provided evidence that new products introduced in an existing therapeutic category are more often below the average price for competing therapies than above it. Mr. Cooper, in his book on the industry, showed that, between December 1959 and October 1965, twenty-two of the thirty-four leading products fell in price, and only three increased. The introduction of new products at below average prices, as well as other political and commercial pressures, tend to bring down the price levels of existing products. The factors underlying that pattern of pricing are at present being investigated. Perhaps they result in part from fears that the opposite pricing policy would attract professional and political accusations of profiteering. Certainly it appears that pricing policies in the industry tend to impose limits on the margins available for sales promotion expenditure. Those limits appear to operate in a direction that should be in the public interest. A company with a product in an entirely new therapeutic field can price its product with reference only to its own commercial objectives, allowing margins that contribute substantially to research overheads and providing for what the company considers optimum sales-promotion expenditure. That should cause the entirely new treatment to become widely known in the shortest time. However, the evidence has suggested that new products introduced to compete with existing treatments are marketed at lower-than-average prices. Apart from the political pressures, that possibly reflects a management decision to give the product a "price advantage" as well as therapeutic advantages over its competitors. That motive, if it enters into pricing decisions, should tend to limit the amount that might justifiably be spent on promoting minor therapeutic advances. The downward trend of prices for established products also tends to reduce the amount it is commercially justifiable to spend on their continued promotion. Without proving that prices or levels of expenditure on sales promotion are correct, the facts suggest that patterns of pricing, and consequent pressures on sales-promotion expenditure, should operate in a direction that is in the public interest.

Comparative Expenditures

Of representatives' time antibiotics take up most and haematinics least. Expenditures on medical representatives, direct mail, and journal advertising are surprisingly similar, and representatives do not appear to play a significantly larger part in promoting newer and more complex therapies than they do for simpler remedies. However, that may reflect a weakness in the data, representative costs being estimated from "diaries" kept by a sample of general practitioners, who record all products discussed, whether a cough mixture mentioned in passing or a new antibiotic that may be discussed at length. Only individual company records can give a more meaningful indication of the real pattern of their work.

Direct mail is often criticised for its volume and consequent failure to attract attention. How could it be made more selective and so more efficient? Will the present "broadcast mailings" come to be replaced by more selective approaches to doctors most likely to welcome information on the particular product?

How much are journal advertisements read? How does expenditure on representatives, mail and journal advertising compare in returns? Those questions have never been adequately answered. Experiments are also needed to find the best ways of promoting proven therapeutic advances. In pharmaceutical promotion some progress has already been made. Readership surveys already carried out of the advertising in different journals should help to eliminate waste. The Association of the British Pharmaceutical Industry publicise how easily doctors can receive only selective mailings or have their names removed from mailing lists altogether. Perhaps limitations in total mailings should come about by those methods.

In 1966 the industry spent on average over £100 per medical representative on their training, and some companies, probably because they cost their training programme to include salaries and overheads of all who participate in courses, estimate their expenditure on training to be nearer £500 per representative per year. The A.B.P.I., and recently founded British Medical Representatives' Association are taking active steps to ensure that the best standards of qualification and training of representatives are applied universally. Britain is already setting an example to the rest of the world in the measures it is proposing to establish minimum standards of representation.

However, sales promotion is an international problem applying to the whole of the technologically advanced world, and increasingly to the developing countries also. The British pharmaceutical industry spends the same proportion of sales on promotion overseas as it does in Britain. The problem is how to ensure as economically as possible that doctors are rapidly aware of pharmaceutical advances, understand and appreciate their implications, and can be persuaded to use them in appropriate cases. British companies' success in that respect overseas is a key to the country's pharmaceutical exports, and the contribution that pharmaceutical innovations make to the balance of payments.

To illustrate how difficult it can be to ensure that new products are properly understood and used, the antidepressives may be cited. Depression as a clinical entity was something few doctors had been taught to recognise because no therapy was previously available for it, and long after the antidepressives became available, doctors were still treating cases of depression with tranquillisers.

But while persuasion is needed to encourage the adoption of new therapies, care must be taken to avoid over-optimism about them. That is sometimes difficult, for the medical profession, at least as much as the manufacturers, may be unjustifiably enthusiastic about the prospects for some new treatment. However, the principle of carefully controlled evaluation before general introduction is now well established. Up to the present the industry has to a great extent borrowed marketing techniques from others and used them sometimes undiscerningly. Now the need for promotion in science-based industry has become accepted, the challenge is to find techniques appropriate for particular industries.

As a tailpiece, since the Ministry of Health is from April to send regular prescribing advice to all general practitioners in a colourful and glossy publication called *Proplist*. The entry of the Ministry into that field may not make glossy mailings any more popular or more effective, but at least they should become more respectable!

PATENTS

COMPLETE SPECIFICATIONS ACCEPTED
From the "Official Journal (Patents)," February 22

Method for preparation of benzodiazepinones. Delmar Chemicals, Ltd. 1,063,891.

Process for the manufacture of hydrazine and derivatives thereof. National Poly-Chemicals, Inc. 1,063,893.

Quinazolinedione derivatives. Miles Laboratories, Inc. 1,063,894.

Ion exchange membrane assemblies. American Machine & Foundry Co. 1,063,895.

6 - *Fluormethyl* - Δ 4,6 *and* Δ 1,4,6 - 3 - *oxo steroids.* British Drug Houses, Ltd. 1,063,921.

6-(*Substituted-methyl*) *steroidal* 4, 6-*dien*-3-*ones.* British Drug Houses, Ltd. 1,063,922.

Cinnamoylaminoisothiazoleanthrones and process for their manufacture. CIBA, Ltd. 1,063,927.

Process for producing purine ribosides or deoxyribosides. Takeda Chemical Industries, Ltd., 1,063,951.

Process for producing purine-ribosides. Takeda Chemical Industries, Ltd. 1,063,952.

Photographic cameras. Bell & Howell Co. 1,063,970.

Dyeing of hair and other keratinous materials and diaminobenzene compounds therefor. Gillette Industries, Ltd. 1,063,979.

Process for the manufacture of organic mercury compounds and products obtained thereby. Metalsalts Corporation. 1,063,995.

Process for producing 13-*substituted gonapolyan*-17β-*ols.* Takeda Chemical Industries, Ltd. 1,064,011.

Device and arrangement relating to cinematograph cameras, and method of taking cinematograph film. Comitetul De Stat Pentru Cultura Si Arta. 1,064,043.

Production of esters. Imperial Chemical Industries, Ltd. 1,064,066.

5α-pregnano-(3, 2-*c*) *pyrazole compounds.* Merck & Co., Inc. 1,064,078.

Purification of boron. W. M. Weil. 1,064,093.

Photographic materials. Eastman Kodak Co. 1,064,095.

Method for producing 1, 1, 2-*trichloroethane.* Asahi Kasei Kogyo, K.K. 1,064,110.

Benzimidazoles and methods of preparing the same. Smith Kline & French Laboratories. 1,064,114.

N-mercaptoacylcephalosporanic acids. CIBA, Ltd. 1,064,119.

1, 2, 5-*oxathiazine derivatives.* Monsanto Co. 1,064,125.

Acylamido sulphonates and sulphates, their manufacture and use. Monsanto Co. 1,064,126.

Quinoline derivatives, process for their production and use thereof in the production of carbostyril derivatives. J. R. Geigy, AG. 1,064,132.

Isothiuronium salts and process for their manufacture. Farbwerke Hoechst, A.G. 1,064,141.

Photographic shutter. Agfa-Gevaert, A.G. 1,064,157.

Method for producing guanylhydrazones. Kitasato Institute. 1,064,176.

Salts of amino tri (*alkylidene phosphonic acids*). Monsato Co. 1,064,198.

Release device for photographic cameras Pentacon Dresden Kamera-Und Kinowerke Veb. 1,064,218.

Quaternary ammonium cyclic imides. Hollichen Corporation. 1,064,231.

Indola (3,2g) *indolizinyl compounds and process for preparing the same.* Mead Johsnson & Co. 1,064,236.

Cell culture slides. Imperial Chemical Industries, Ltd. 1,064,244.

View finder systems for photographic cameras. Pentacon Dresden Kamera-Und Kinowerke Veb. 1,064,249.

Amides and pharmaceutical compositions containing them. Imperial Chemical Industries, Ltd. 1,064,252.

Carbodiamides and the manufacture thereof. Upjohn Co. 1,064,257.

Derivatives of 2-*anilino-nicotinic acid and process for their preparation.* Laboratories, U.P.S.A. 1,064,259.

Substituted α-(3-*indolyl*)-*aliphatic or aryl-substituted aliphatic acids and dervatives.* Merck & Co., Inc. 1,064,262.

Pentacosapeptide. Sandoz, Ltd. 1,064,263.

Progesterone derivatives. Syntex Corporation. 1,064,284.

Corticoid derivatives. Syntex Corporation. 1,064,285.

Preparation of 10α-*methyl steroids.* Syntex Corporation. 1,064,286.

Substituted 2-*pyrrylketones.* Laborataire Roger Bellon. 1,064,293.

Antibiotic coumermycin. Bristol-Banyu Research Institute, Ltd. 1.064,300.

Process for the manufacture of phthalazines and phthalazones. CIBA, Ltd. 1,064,303.

Preparation of acid phytase. International Minerals & Chemical Corporation. 1,064,304.

Phosphorus-containing derivatives of 6-*chromanol.* Merck & Co. 1,064,311.

Halogenated chromanol derivatives. Merck & Co. 1,064,312.

γ-hydroxy-1,4-*quinone derivatives.* Merck & Co. 1,064,313.

Phosphorus-containing derivatives of 6-*chromanols.* Merck & Co. 1,064,314.

Halogen-containing derivatives of 6-*chromanol.* Merck & Co. 1,064,315.

Substituted urea and its preparation. J. R. Geigy, A.G. 1,064,357.

Pharmaceutical preparations containing nucleic acid metabolism inhibitors. Upjohn Co. 1,064,385.

Depilatory composition. Chemway Corporation. 1,064,388.

Preparation of N,O-dimethyl-hydroxylamine derivatives. E.I. Du Pont De Nemours & Co. 1,064,482.

Preparation of O-methyl-hydroxylamine derivatives. E.I. Du Pont De Nemours & Co. 1,064,483.

7-*amino-cephalo-sporanic acid derivatives.* CIBA, Ltd. 1.064,495.

Derivatives of yohimbane. Inverni & Della Beffa, S.p.A. 1,064,496.

Process for preparing isophthalic acid derivatives. Chemische Fabrik Schweizerhall. 1,064,524.

Process of preparing isophthalic acid derivatives. Chemische Fabrik Schweizerhall. 1,064,525.

Substituted 5-*carboxy-imidazole derivatives and preparation thereof.* Janssen Pharmaceutica, N.V. 1,064,531.

Method for producing 2-*mercapto*-4,6-*bis* (*amino*) 1,3,5-*triazine derivatives.* Nippon Kayaku, K.K. 1,064,570.

Preparations containing an antitussive and an enzyme. William H. Rorer, Inc. 1,064,581.

British patent specifications relating to the above will be obtainable (price 4s. 6d. each) from the Patent Office, 23 Southampton Buildings, Chancery Lane, London, W.C.2, from **April 5.**

TRADE REPORT

he prices given are those obtained by importers or manufacturers for bulk quantities or original packages. Various harges have to be added whereby values are augmented before wholesale dealers receive the goods into stock.

London, March 15: It was another quiet week in the markets and few rice changes have occurred since the last report.

Cape Aloes fell 5s. per cwt. on the pot, following an easier trend at rigin, but Buchu was sixpence per lb. earer. Among Spices, Seychelles Cin-amon was down 2s. 6d. per cwt. as as Cochin Ginger, but Zanzibar loves were firmer after a long period f stability. Indian Valerian was re-uced by 10s. per cwt. in both posi-ons. Shipments of Tinnevelly Senna rom the port of Tuticorin during Feb-uary were as follows.

	U.K. Tons	U.S. Tons	Europe Tons
enna			
pods	—	—	—
leaves	2	—	35

Among Essential Oils the firm tone f Anise (up threepence lb. for shipment) and Bois de Rose (up ninepence) as maintained. Madagascar Clove eaf was one penny lb. dearer. Lower er lb. were Brazilian Peppermint down 4½d.). Patchouli (down 5s.) and etitgrain (threepence).

Tartaric acid is dearer by 25s. to 2s. per cwt. according to quantity. ne-ton lots are now 300s. cwt. and 1-wt., 310s. β-Carotene, 20 per cent. olution was reduced by 30s. kilo. Mercurials were marked up because f a £10-per-flask increase in the cost f the metal. Ammoniated mercury, owever, was unchanged.

Pharmaceutical Chemicals

Adrenaline.—(Per gm.). Synthetic b.p., kilo lots, 1s.; 500 gm. is 1s. 2d. acid artrate, b.p., 1 kilo, 8½d.; 500 gm., 10d.

Aloin.—Micro-crystalline, 14-lb. lots, 4s. per lb.

Aminacrine hydrochloride.—b.p. is 24 per kilo.

Antimony salts.—trichloride, sol., .p.c., 1934, carboys, 6s. 1d. per kilo; lake, 14s. 4d. per kilo.

Benzamine lactate.—In 500-gm lots, ,023s. per kilo.

Benzocaine.—b.p. is 13s. 2d. per lb. in -cwt. lots.

Chlorocresol.—Pharmaceutical quality, s. 7d. per lb. (1-cwt. lots).

Chloroform.—35-litre lots in win-hesters, b.p., 11s. 5½d. per litre; in drums 0s. 7d.; 175-litre lots, 11s. and 10s. 1½d.

Chlorophyll.—Water soluble, 100 per ent. (medicinal grade), 250s. per lb.; oil oluble, 25s. per lb.

Chlorphenesin.—50-kilo lots are 72s. 6d. er kilo.

Glycerin.—Chemically pure, b.p. (per wt.).

	Over 25 tons	5 tons and under 25 tons	1 ton and under 5 tons	Under 1 ton
ank Wagons	s. d.	s. d.	s. d.	s. d.
10–14 tons	196 0	—	—	—
5–10 tons	196 6	199 6	—	—
rums				
5 cwt.	200 0	202 0	205 0	211 0
22 cwt.	203 0	205 0	208 0	214 0
ins				
56 lb.	207 0	209 0	212 0	218 0
28 lb.	229 0	231 0	236 0	245 0
14 lb.	233 0	235 0	240 0	249 0

Minimum delivery 2½ cwt. Drums charged nd returnable. Tins and cases free. Minimum terms for technical grade glycerin s.g. 1·2627 are 191s. per cwt. for lots of over 25 tons in bulk deliveries of 10-14 tons.

Formaldehyde.—b.p. solutions, 5-drum lots, 710s. per ton delivered.

Guaiacols.—liquid b.p.c., 16s. per lb. for 1-cwt. lots; crystals, 15s. 9d.; carbonate, 18s.

Hypophosphites.—Per kilo:—

Quantity	1 kilo	12·5 kilos	50 kilos
	s. d.	s. d.	s. d.
Calcium, b.p.c.	17 2	16 1	15 1
Iron, b.p.c. ...	34 10	33 7	32 5
Magnesium ...	29 3	28 2	27 2
Manganese, b.p.c.	35 3	33 11	32 9
Potassium, b.p.c.	23 1	22 5	21 4
Sodium, b.p.c. ...	19 2	18 1	17 1

Iron salts.—ammonium citrate, 250-kilos, 9s. 4d. kilo; carbonate (saccharated), b.p.c., 1949, 28-lb., 3s. 3d. lb.; 1-cwt., 3s. lb.; gluconate, b.p.c., 4s. 9d. per lb. in 1-cwt. lots; phosphate, b.p.c., 7s. 7d. per kilo;—quinine citrate, 6s. per oz. in 100-oz. tin, nominal; subcarbonate, 100-kilos, 6s. 0½d. per kilo; sulphate, b.p., crystals 1-cwt. 70s. per cwt.; 5-cwt., 65s. per cwt.; granular, 2s. 6d. per cwt. extra; exsiccated, 1-cwt., 126s., 5-cwt., 121s. per cwt.

Isoprenaline sulphate.—5-kilo, 330s. per kilo.

Kaolin.—Light, 500 kilos, 1s. 2d. per kilo and 1,000 kilos, 1s. 1¾d.

Lactose.—b.p. in 1-ton lots packed in 1-cwt. paper-lined sacks, £129 10s. per ton delivered in the United Kingdom.

Magnesium carbonate. — 1-ton lots: light, 129s.; heavy, 148s. per cwt.

Magnesium hydroxide.—b.p.c., 1-cwt. lots, 4s. 1d. per lb.; 1-ton, 3s. 8d. per lb.

Magnesium oxide, b.p.—light, 1-cwt. lots, 4s. per lb., 1-ton, 3s. 9d.; heavy, 5s. 10d. per lb.

Magnesium peroxide.—b.p.c. (15 per cent.), 3s. 11d. per lb. for 1-cwt. lots.

Magnesium phosphate.—tribasic, b.p.c., 1949, 10s. 1d. per kilo, in sacks; dihydrogen, 9s. kilo for 50-kilo lots.

Magnesium sulphate.—b.p. in minimum 1-ton lots from £21 to £25 per ton. exsiccated, £61 per ton, ex works.

Magnesium trisilicate.—(Per lb.), Under 5-cwt. lots, 4s. 3d.; 1-ton, 3s. 6d.

Mercurochrome.—250-gm lots are 147s. per kilo; 1-kilo, 127s.

Mercury salts.—Per kilo for under 50-kilo lots—ammoniated powder, 139s.; perchloride, 116s. 6d.; subchloride, 134s. 2d.; oxides, yellow, 139s. 8d. and red, 144s. 8d. iodide (25 kilo lots), 105s. 9d.

Mersalyl.—acid, 250s. per kilo; sodium, 340s.

Methyl salicylate.—5-ton lots 3s. 2d. per lb.; 1-ton, 3s. 2½d.; 10-cwt., 3s. 3d.; 5-cwt., 3s. 6d.; 1-cwt., 3s. 8d.

Methyl testosterone.—Per kilo, £95.

Paraldehyde.—b.p. in 12-winchester lots, 2s. 10d. per lb. (6s. 3d. kilo); 10-gall. carboys, 2s. 4d.

Paracetamol.—One-ton lots are 10s. 2d. per lb.

Paraffins.—Prices to wholesaler distributors per gall. delivered in drums.—Liquid heavy b.p., 8s. 7½d. for over 5-drum lots; 5 drums and under, 8s. 8½d. light b.p., 7s. 0½d. and 7s. 1½d. for same quantities. Technical white: light, 6s. 5d. and 6s. 6d.; medium, 7s. 6d. and 7s. 7d. All subject to 0.2d. per gall. Government surcharge. Drums charged and returnable. Soft: Best grades white medium consistency, £116 15s. per ton and soft consistency, £113 7s. 6d.; yellow, £94 10s. Other b.p. grades at £95, £100 10s., £106 per ton for white and at £74 17s. 6d. for yellow. All in non-returnable drums delivered.

Prednisolone.—alcohol and acetate from 7s. per gm.

Prednisone.—1-kilo lots, alcohol and acetate, 6s. 6d. per gm.

Progesterone.—1-kilo lots 1s. 3d. per gm.

Quinalbarbitone.—sodium and acid are 92s. 6d. for less than 25-kilo lots.

Quinidine.—sulphate, 1,200s. per kilo (or 3,400s. per 100-oz.) for 15 kilos (500-oz.) lots upwards. alkaloid is 1,382s. 9d. kilo, or 3,919s. 9d. per 100-oz. for similar quantities.

Quinine.—Schedules withdrawn.

Saccharin.—b.p. powder, 1 lb. and over, 15s. 6d. per lb.; sodium salt, b.p., 14s.

Sal prunella.—Balls, 3s. 9d. per lb. in 1-cwt. lots.

Santonin.—5-kilo lots, 320s. per kilo.

Strychnine.—100-oz. lots alkaloid, 7s. per oz. sulphate and hydrochloride, 6s.

Sulphur.—(Approximate prices per ton), sublimed flowers, b.p., £70; technical, £65; ground, £26 to £30; precipitated, b.p., £130; roll, £32 to £36. All ex store.

Talc.—b.p.c. in 1-ton lots is quoted at 1s. 2d. per lb.

Theobromine.—alkaloid from 25s. 11d. per kilo., c.i.f.

Thymol.—1-cwt. lots are 11s. 3d. per lb.

Urea.—Pharmaceutical grade, £59 15s. per ton in 1-cwt. bags non-returnable; technical quality, £41 5s. per ton (4-ton lots).

Crude Drugs

Aconite. — Spanish *napellus* short at 3s. 6d. per lb.; shipment, 3s. 3d. c.i.f.

Agar. — Kobe No. 1 for shipment, 22s. 3d., c.i.f.; spot cleared. Spanish scarce at 26s. 6d., duty paid.

Aloes.—(Per cwt.). Cape primes, spot, 225s.; shipment, 210s., c.i.f. and Curacao, 400s. spot nominal; shipment, 385s., c.i.f.

Anise.—Chinese star, 145s. per cwt. spot, duty paid, f.a.q. for shipment, 117s. 6d., c.i.f.

Annatto. — Madras, f.a.q. seed, spot, quoted at 195s. per cwt.

Asafoetida.—Persian quoted at £19 cwt.

Balsams.—(per lb.): Canada: Shipment, cleared, spot, 35s. Copaiba: B.P.C. spot, 11s. 6d.; shipment, 6s. 6d., c.i.f.; Peru: spot, 16s.; shipment, normally 14s. 6d., c.i.f.; Tolu: B.P. from 12s. 6d.

Belladonna.—leaves, 4s. 3d. per lb., spot; shipment, 3s. 10d. c.i.f. herb, 3s. 3d. spot; root, 1s. 11d. per lb., spot; shipment, 1s. 9d., c.i.f.

Buchu.—Spot, 10s. per lb. nominal; shipment, 9s. 6d. to 9s. 9d., c.i.f.

Cinnamon.—bark, Seychelles, 127s. 6d. cwt. spot; shipment, 100s., c.i.f.; Ceylon quills for shipment, five 0's 10s. 9d., two 0's 9s. 5d., seconds, 8s., quillings, 5s. 4d. lb., all c.i.f.

Ginger.—(Per cwt.). Nigerian split, 70s., spot, shipment, 80s., c.i.f.; peeled, spot, 150s., shipment, 140s., c.i.f. African, spot, 210s., shipment, 150s., c.i.f. Jamaican No. 3, spot, 265s., shipment, 245s., c.i.f.; Cochin, spot, 187s. 6d.; shipment, 160s., c.i.f.

Gum acacia.—Kordofan cleaned sorts, 215s. per cwt., spot; shipment, 205s., c.i.f.

Honey.—(Per cwt., c.i.f.). Australian light amber, spot, 125s. to 130s.; and medium amber, 110s. to 115s. Argentine, 105s. to 110s.; Canadian, 175s. to 180s.; Mexican, 115s. to 120s; Chinese (April-May), 85s. to 100s.

Hydrastis.—Spot is 36s. per lb.; shipment, 34s. 6d., c.i.f.

Hyoscyamus.—*Niger*, 2s. 6d. per lb., spot, and 2s. 3d., c.i.f.

Jalap.—Mexican whole bulbs, 4s. per lb. on spot; shipment, 3s. 9d., c.i.f. Brazilian, 1s. 9d., c.i.f.; spot, 1s. 11d.

Karaya.—No. 1 f.a.q. gum, spot, 415s.; No. 2, 300s. per cwt.

Kola nuts.—West African halves are 7½d. per lb. on the spot; shipment, 7d., c.i.f.

Lanolin.—anhydrous, b.p. is from 2s. 2½d. to 2s. 6d. per lb. in 1-ton lots delivered free drums. Commercial grades from 1s. 4½d. and cosmetic, 2s. 8d.

Lemon peel.—Spot, 1s. 9d. per lb.; partially extracted, 1s.

Lime flowers.—Spot, 2s. 2d. per lb.

Liquorice.—root, Russian, 67s. 6d. per cwt.; Anatolian, 57s. 6d.; Anatolian decorticated, 170s. block juice: Anatolian, 210s. to 220s. per cwt.; Italian, 193s.; sticks from 244s. to 460s. per cwt.

Lobelia.—Dutch on the spot, 4s. 6d. per lb.; shipment, 4s. 3d., c.i.f. American, 12s. per lb. spot and 11s., c.i.f.

Lycopodium.—Indian triple-sifted, 6s. per lb., spot.

Mace.—No. 1 broken, has been reduced to 12s. 6d., lb., c.i.f.

Menthol.—(Per lb.). Chinese shipment, 30s. 6d., c.i.f.; spot, 33s. duty paid, Brazilian for shipment, 30s., c.i.f.; spot, 32s. 6d., duty paid.

Mercury.—Spot, £185 per flask of 76 lb., ex warehouse.

Myrrh.—Spot is now 430s. cwt.

Nutmegs.—(Per lb.). West Indian, spot defectives, 5s. 3d.; shipment, 4s. 9d., c.i.f.; sound, unsorted, 7s. 6d.; spot; 7s. 3d. c.i.f., for shipment; 80's, 12s. spot; shipment, 9s. 3d., c.i.f., East Indian for shipment, b.w.p., 4s. 3d., 110's, 8s. 9d.; 80's, 9s. 6d., all c.i.f.

Nux vomica.—Cochin, 110s. per cwt. on the spot; shipment, 80s., c.i.f.

Olibanum.—Spot is from 195s. to 250s. cwt. as to grade.

Orange peel.—Spot: Sweet ribbon, 1s. 8d. per lb., bitter quarters: West Indian, 10½d.; Spanish, 4s. 9d.

Pepper.—White Sarawak, 3s. 3d. per lb. spot; shipment, 3s. 0¼d., c.i.f. Black Sarawak, 2s. 8d. spot; shipment, 2s. 3½d., c.i.f. Black Malabar, 277s. 6d. per cwt. c.i.f. Brazilian black No. 1, 2s. 8¼d. lb. duty paid.

Sarsaparilla.—Jamaican native red, spot, 4s. per lb.; shipment, 3s. 6d., c.i.f.

Seeds.—(Per cwt.). Anise.—Spanish, 250s., duty paid. Caraway.—Dutch, 157s. 6d., spot. Celery.—Indian, 160s., spot; shipment lower at 145s., c.i.f. Coriander.—Moroccan nominally 145s., duty paid; Rumanian splits, 120s., duty paid; shipment, Moroccan 117s. 6d., Rumanian split, 99s., both c.i.f. Cumin.—Spot, Cyprian, 26s.; Iranian, 250s., duty paid; shipment, Iranian, 180s., c.i.f. Dill.—Indian, spot, 115s.; shipment, 92s. 6d., c.i.f. Fennel.—Indian, 155s.; shipment, Chinese reported sold at 85s., c.i.f., for March/April. Fenugreek.—Moroccan, 82s. 6d., duty paid; shipment, 71s. 6d., c.i.f. Mustard.—English, 80s. to 97s. 6d.

Senega.—Canadian, 35s. per lb., spot and c.i.f.; Japanese, 18s. 6d. duty paid and 18s. c.i.f.

Tonquin beans.—Para, spot, cleared; shipment, 12s. lb., nominal.

Tragacanth.—Ribbon, No. 1, £220 to £225 per cwt.; No. 2, £200 to £205.

Turmeric.—Madras finger, spot, 100s. per cwt.; shipment, 90s., c.i.f.

Valerian root.—Indian, spot, 190s. per cwt.; shipment, 180s., c.i.f. Continental root, 425s., spot; shipment, 410s., c.i.f.

Witch hazel leaves.—Spot, 6s. 3d. per lb.; shipment, 6s., c.i.f.

Essential and Expressed Oils

Almond.—Spanish sweet oil is 6s. 6d. per lb. spot.

Amber.—Rectified on the spot, 1s. 6d. per lb.

Anise.—Chinese, spot, 11s. 6d. lb.; shipment, 11s., c.i.f.

Bay.—From 41s. per lb. on the spot.

Birch tar.—Rectified 10s. lb. on the spot.

Bois de rose.—Brazilian, spot, 20s. 9d. per lb.; shipment, 20s. 3d., c.i.f.

Buchu.—Spot, from 370s. to 400s. per lb.

Cade.—Spanish from 2s. per lb. for drum lots.

Cananga.—Spot from 32s. 6d. per lb.

Cardamom.—Imported, 610s. per lb.; English distilled, 1,000s.

Cassia.—Spot from 30s. to 35s. per lb. for 80-85 per cent.

Cedarwood.—American from 7s. 6d. per lb. on the spot; East African, 8s. 6d.

Celery seed.—Indian, 100s. per lb.; English, 200s.

Clove.—Madagascar leaf for shipment, 6s. 3d., c.i.f., spot, 6s. 6d., in bond. Rectified, 10s. Distilled bud oil, English, b.p., 26s. per lb., for 1-cwt. lots.

Cubeb.—Spot supplies of English are 90s. per lb.

Cumin.—English distilled oil, 120s. per lb. imported, 90s. to 100s.

Dill.—Imported from 36s. per lb., spot.

Eucalyptus.—Chinese, 80-85 per cent., 8s. 9d. per kilo in bond; shipment, 8d. 3d. c.i.f.

Fennel.—Spanish sweet, 16s. per lb., duty paid.

Geranium.—Bourbon, 85s. to 87s. 6d., spot; Algerian, 75s.

Ginger.—Imported (per lb.); Indian, 165s.; Chinese, 75s.; Jamaican, 132s. 6d.

Grapefruit.—West Indian small lots on spot at 12s. 9d. per lb. Florida, 14s.

Lavandin.—Spanish from 20s. to 27s. per lb., as to quality.

Lavender.—French from 40s. to 60s. per lb. as to quality.

Lavender spike.—Spanish from 23s. 6d. to 28s. per lb. on the spot.

Patchouli.—Spot, 45s. to 50s. per lb., duty paid; shipment, 36s., c.i.f.

Pennyroyal.—Forward shipment offers at 17s. duty paid.

Peppermint.—(Per lb.). *Arvensis:* Chinese for shipment, 10s. 4d.; c.i.f.; spot, 10s. 6d. Brazilian for shipment, 9s. 6d., c.i.f.; spot, 9s. 10½d. *Piperita:* Italian spot, 75s.; forward shipment, 82s. 6d. American from 36s. to 56s., as to source.

Petitgrain.—Paraguay for shipment, 15s., c.i.f.; spot, 15s. 9d. per lb.

Pimento.—Imported berry, 110s.; English distilled, 390s.; leaf, 24s. per lb.

Vetivert.—Bourbon, spot, 85s. per lb.

UNITED STATES REPORT

New York, March 14: Effective April 1, Isopropyl alcohol will rise one cent to make the anhydrous 49 cents a gallon, the 95 per cent. 47 cents and the 91 per cent. 45 cents. Leading producers announced a ½ cent boost for high-purity Glycerin to 25 cents a lb. on the same date. Camphor is reported firm in tone and active, while crude Iodine is in steady demand. Higher per lb. were Buchu at $1.45 (up five cents), and Gum Acacia, amber sorts, at 29 cents, up 1½ cents. Grapefruit oil gained 10 cents to $2 a lb. and White camphor oil rose 10 cents to 60 cents. Patchouli fell 50 cents to $7.25 and Caraway dipped 25 cents to $5.75.

TRADE MARKS

APPLICATIONS ADVERTISED BEFORE REGISTRATION

"Trade Marks Journal," March 8, No. 4619.

For chemical products for use in industry and photography (I)

PERNIX ENTHONE, 876,017, by Pernix Enthone, Paris, France.

For artificial sweetening preparations (I)

SIM-AXIN, 876,624, by Andomia Products, Ltd., Bradford, Yorks.

For paper, plates and films, all being sensitised articles for use in photography; and photographic chemical substances (I)

DUPLOLITH, 896,060, by Gevaert-Agfa, N.V., Mortsel, Belgium.

For chemical products and substances, all for industrial purposes (I)

EMFLEX, 896,944, by Chas. Pfizer & Co., Inc., New York, U.S.A.

For emulsifying and wetting agents, being chemical products for use in industry (1)

SELJUT, 897,201, by Adolph Hess & Bro. Ltd., Leeds, 3, Yorks.

For chemical products for use in photographic processes (I)

ACURAPID, 898,847, by Paterson Products, Ltd., London, W.C.1.

For detergents for use in manufacturing or industrial processes (1)

DOT, 898,994, by Domestos, Ltd., Newcastle upon Tyne, 6.

For non-medicated toilet preparations, perfumes, cosmetic preparations, soaps, preparations for the hair, essential oils, after shaving lotions and Colognes (3)

Device with words BRITISH CARIBBEAN SPICE & LIME COLOGNE, B877,776, by Robinson-Bishop, Ltd., London, W.I.

For preparation for the hair (3)

Device with word CREMFIX, B888,119. by Linetti Profumi, S.p.A., Venice, Italy.

For soaps, soap powders, detergents (not for use in industrial or manufacturing processes), and preparations for laundry use (3)

CASTEX, 884,408, by Kortman & Schulte, N.V., Rotterdam, 6, Holland.

For detergents (not for use in industrial or manufacturing processes) but not including detergents for footwear (3)

SHUGARDE, 895,787, by Kemsol, Ltd., London, W.C.2.

For non-medicated toilet preparations, essential oils; and cosmetics, hair lotions and hair colourants, all for lightening the colour of the hair and skin (3)

VITABLONDE, 890,302, by Fisons Pharmaceuticals, Ltd., Loughborough, Leics.

For non-medicated toilet and cosmetic preparations in cream or lotion form for the feet (3)

COTY DAINTY FEET, 897,250, by Coty (England), Ltd., London, W.I.

For perfumes, non-medicated toilet preparations, cosmetic preparations, dentifrices, depilatory preparations, toilet articles, sachets for use in waving the hair, shampoos and soaps (3)

LOOK, B895,781, by Beecham Toiletry Division, Brentford, Middlesex.

For preparations for the hair (3)

IMPART, B896,531, by Southern Aerosol Company, Ltd., Hove, 3, Sussex.

For non-medicated preparations for the care of the skin; cosmetics; non-medicated toilet preparations; perfumes; soaps; and dentifrices (3)

CHIN UP, 894,496, by Beauty Counselors of London, Ltd., Newhaven, Sussex.

For swabs of cotton wool for toilet or cosmetic purposes for sale in the United Kingdom and for export except to Aden, Gibraltar or the Fiji Islands (3) *and for swabs of cotton wool for pharmaceutical, surgical and veterinary use, for sale in the United Kingdom and for export except to Aden, Gibraltar and the Fiji Islands* (5)

Q-TIPS, B891,510-11, by Q-Tips (Great Britain), Ltd., London, N.W.10.

For deodorising preparations for footwear (5)

FOOTING, 883,341, by Produits Chimiques "Lion Noir" Produits d'Entretien "Lion Noir-Eclipse," Peri-Montrouge (Seine), France.

PRINT AND PUBLICITY

FOR THE SHOP DOOR: A. Wander, Ltd., 42 Upper Grosvenor Street, London, W.1, have produced for retailers an eye-catching reproduction of the well known Ovaltine tin to fix on the shop-door, and with a movable inset in its "lid" that can be turned to "Open," "Closed" or "Closed for Lunch." The card is self-adhesive on the door. It is obtainable through the company's representative or direct.

PRESS ADVERTISING

Aladdin Industries, Ltd., Greenford, Middlesex. Aladdin flasks. In *Woman's Own*.

Noxell Corporation (distributors Keldon, Ltd., Wandsworth Road, Perivale, Middlesex): Noxzema. In women's magazines.

Plough Inc. (United Kingdom), Ltd. (distributors Chemist Brokers, Crown House, Morden, Surrey): QT lotion. In *Daily Express, Daily Mirror* and women's journals.

PUBLICATIONS

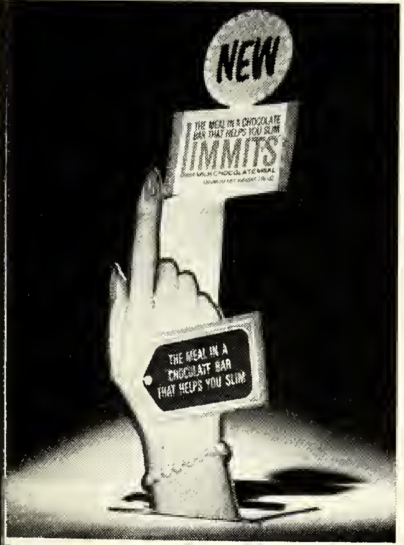
Catalogues and Lists

Instrument Society of America, 530 William Penn Place, Pittsburgh, Pennsylvania 15219, United States: 1967 publications catalogue (pp. 20).

Ralph N. Emanuel, Ltd., 3 Leather Market, London, S.E.1: Catalogue of amino acids and related compounds manufactured by Laboratories Plan, S.A., Geneva, Switzerland.

Zyma (United Kingdom), Ltd., Cotteshall Lane, Godalming, Surrey. Price list (dated March 1967).

PACKS SHOWN: Showcard incorporating new packs of Ruby liquid and tablets for clearing worms in dogs. Makers are Strenol Products, Ltd., 240 Earls Court Road, London, S.W.5.


NEW
THE MEAL IN A CHOCOLATE BAR THAT HELPS YOU SLIM
LIMMITS
THE MEAL IN A CHOCOLATE BAR THAT HELPS YOU SLIM

PACK ON DISPLAY: A new display unit produced by Unicliffe, Ltd., Stonar, nr. Sandwich, Kent, is designed to display a bar of Limmits plain or milk chocolate. The unit may be used as a focal point for a window display or as a counter display.

CONTEMPORARY THEMES

Subjects of contributions in current medical and technical publications

B.C.G. Efficacy and applicability of mass B.C.G. vaccination in tuberculosis control. *Brit. med. J.*, March 11, p. 587.

Ascorbic acid. Trial of, in prevention of colds. *Brit. med. J.*, March 11, p. 603.

Hazard of peritoneal dialysis: contaminated fluid. *Brit. med. J.*, March 11, p. 606.

Buccal oxytocin after amniotomy for induction of labour. *Brit. med. J.*, March 11, p. 608.

Orciprenaline. Stimulation of adrenergic β-receptors by. *Brit. med. J.*, March 11, p. 610.

Skin collagen in rheumatoid arthritis, and the effect of corticosteroids. *Lancet*, March 11, p. 525.

Decamethylenebis [(4-substituted amino) quinaldinium salts]. A note on a series of, with potent antibacterial properties. *J. Pharm. Pharmacol.*, March, p. 161.

A polarographic limit test for sulphoxide in chlorpromazine. *J. Pharm. Pharmacol.*, March, p. 176.

Drugs and hormones. Studies with, on the human colon. *Proc. roy. Soc. Med.* March, p. 215.

Magnesium pemoline and dextroamphetamine. Effects of, on human learning. *Science*, February 17, p. 849.

Louis Herbert—Canada's first pharmacist. *Canad. pharm. J.*, January, p. 4.

History of pharmacy in Manitoba. *Canad. pharm. J.*, January, p. 5.

Chloral-mag anaesthesia in the camel (*Camelus dromedarius*). *Vet. Rec.*, March 11, p. 322.

Action of drugs in the central nervous system. *Nature*, March 11, p. 995.

Calcium and contraction of heart and smooth muscle. *Nature*, March 11, p. 1,044.

Immunization in general practice. *J. Coll. gen. Pract.*, March, p. 197

COMING EVENTS

Items for inclusion under this heading should be sent in time to reach the Editor not later than first post on Wednesday of the week of insertion.

Monday, March 20

Enfield Chemists' Association, Enfield Arms hotel, Enfield, at 7.45 p.m. Speaker from Polaroid (U.K.), Ltd., on "The Polaroid Lens and Camera."

Guildford Branch, Pharmaceutical Society, Prince of Wales hotel, Guildford, at 7.45 p.m. Annual meeting and exhibition of members' slides.

Society of Chemical Industry, 14 Belgrave Square, London, S.W.1, at 5 p.m. Dr. P. S. Hewlett (Pest Infestation Laboratory) on "Synergism and Potentiation in Insecticides."

Tuesday, March 21

Coventry and Warwickshire Branch, Pharmaceutical Society, Conference room, City Police headquarters, Little Park Street, Coventry, at 8 p.m. Granada Television, Ltd., film "Drug Addiction" and speakers from police drug squad, Birmingham psychiatric unit, city social and welfare workers and pharmacists.

Edinburgh and South-eastern Scottish Branch, Pharmaceutical Society, 36 York Place, Edinburgh, at 7.45 p.m. Mr. Lacey (assistant secretary, Institute of Bankers, Scotland) on "Background to Investment."

School of Pharmacy, Liverpool Regional College of Technology, Byrom Street, Liverpool, 3, at 8 p.m. Dr. G. F. Somers (Reckitt & Sons, Ltd., Hull) on "Drugs and the Foetus."

South-east Metropolitan Branch, Pharmaceutical Society, Fox on the Hill hotel, Denmark Hill, London, S.E.5, at 8 p.m. Mr. J. W. Hadgraft (chief pharmacist, Royal Free Hospital) on "Formulations of the B.P.C.

South-west London Chemists' Association and Wandsworth Division, British Medical Association, Cornet of Horse hotel, London, S.W.11, at 8 p.m. Professor A. D. Macdonald on "Drug Dependence."

West Kent Branch, Pharmaceutical Society, Bull's Head hotel, Chislehurst, at 8 p.m. Film evening.

Woking Branch, Pharmaceutical Society, Red House hotel, Woking, at 8 p.m. Mr. D. E. Sparshott (a member of Council) on "What is Right With the Council."

Wednesday, March 22

Bournemouth Branch, Pharmaceutical Society, Cornelia nurses' hostel, Poole, at 1.20 p.m. Dr. J. Hoyle on "A Month in the U.S.A."; at post-graduate medical centre, Boscombe, Mr. I. M. R. McMillan on "The Surgery of Rheumatic Heart Disease."

Great Yarmouth and Lowestoft Branch, National Pharmaceutical Union, Crown hotel Lowestoft, at 7.30 p.m. Members' discussion.

Leeds Branch, Pharmaceutical Society, Griffin hotel, Leeds, at 7.30 p.m. Annual dinner.

Reading Branch, Pharmaceutical Society, Wellcome Historical Medical Museum, Euston Road, London, N.W.1, at 2.30 p.m. Visit.

South London and Surrey Pharmacists' Golfing Society, Purley Downs golf club, Purley Downs Road, Purley, at 1 p.m. Stableford competition for Scotia bowl and other prizes.

Thursday, March 23

Bournemouth Branch, Pharmaceutical Society, Post-graduate medical centre, Boscombe, at 7.45 p.m. Dr. R. Walker on "Drugs Acting on the Central Nervous System, part II, including Anticonvulsants, Tremor Suppressants and Anti-emetics." (post-graduate course.)

Harrogate Branch, Pharmaceutical Society and Leeds Branch, National Pharmaceutical Union, St. George hotel, Ripon Road, Harrogate, at 8 p.m. Film evening.

Exhibitions and Fairs

Photography in Space. Exhibition of photographs illustrating the achievements of the United States and British aero space industries, Kodak House, Kingsway, London, W.C.2. March 23 to April 18 (except Saturdays and Sundays and during the Easter period), 9 a.m. to 5 p.m.

Advance Information

National Pharmaceutical Union, Abbey Hotel, Great Malvern, Worcs, at 2.30 p.m. on May 14. Area meeting. Topics include "Current N.P.U. Policy"; "Marketing Policy and N.P.U. Products"; "Pharmacy Planning"; "Staff Training" and "National Health Service Matters."

Proprietary Articles Trade Association Devon room, Connaught rooms, Great Queen Street, London, W.C.2, at 2.45 p.m. on April 13. Annual meeting.

Courses and Conferences

Institute of Packaging, Batchwood Hall, St. Albans, Herts, April 19-20. Seminar on cost reduction techniques in packaging. Details from Information Officer, Institute of Packaging, Malcolm House, Empire Way, Wembley, Middlesex.

Prescribers' Press

What doctors are reading about developments in drugs and treatments

NO evidence has been found by workers at the Common Cold Research Centre, Salisbury, Wilts, to suggest that treatment with ascorbic acid (3gm. daily) favourably affected colds in volunteers in a clinical trial challenged with a variety of viruses. Preliminary experiments had shown that an ascorbic acid level of 10mgm. per 100 mils of medium afforded tissue cultures no protection against eleven strains of respiratory virus. Neither had a dose of 4mgm. daily against influenza in mice. Ninety-one volunteers who took part in the trial itself were given 3gm. of ascorbic acid daily or placebo tablets. After three days they received intranasal drops containing an M rhinovirus, H rhinovirus, a "new" strain of rhinovirus that can be grown only in organ cultures, influenza virus type B or a "new" virus related to avian bronchitis. No significant difference was found in number or severity of colds in treated and untreated volunteers although length of incubation and duration of symptoms varied. Possibility of a specific effect on symptoms of sore throat or occurrence of mucopurulent nasal discharge was concluded unlikely from figures for volunteers in each group who developed such symptoms. In discussion of previous trials the authors state that the literature indicates that the vitamin may reduce incidence or severity of colds and possibly streptococcal pharyngitis in deficient subjects but large doses given to well-nourished subjects are unlikely to have the same effect. (*B.M.J.*, March 11, p. 603).

A SURVEY of 940 1-litre plastic containers of peritoneal dialysis fluid by workers at Maryfield Hospital and Queen's College, Dundee, resulted in eighteen (2 per cent.) being found definitely to be leaking. From fourteen of them a variety of bacteria and fungi were isolated from the inner bag. Moisture was discovered inside the outer envelope of a further 102 containers and six were found to give a positive response when tested for glucose. Nine of high and twenty-seven of low glucose content were tested by culture, growth being obtained from thirty-one. Fluid in the inner bag was sterile in all but one. Although even grossly contaminated fluid yielded generally non-pathogenic organisms the authors point out that in patients receiving peritoneal dialysis some air contaminants may be less innocuous than usual. They question whether plastic containers in current use are sufficiently reliable and suggest that every bag should be inspected carefully, preferably twice, (once in the pharmacy and once in ward) before clinical use and that any showing more than a trace of moisture should be rejected. The taking of peritoneal dialysis cultures every twelve hours during treatment is also recommended. A letter from Mr. W. T. Simpson (head of medical services, Allen & Hanburys, Ltd., makers of Dialoflex peritoneal dialysis preparations) states that previous estimates (made from complaints received by the company) put the failure rate at about 1 in 6,000—that was likely to be low owing to not all failures being reported. The 2 per cent. rate reported in the paper was not representative and had been traced to a faulty machine for welding the plastic neck into the bag. That had been corrected and an extra inspection procedure instituted. Glucose on the surface of intact inner bags resulted from some bags in each batch bursting during autoclaving. A separate washing procedure had now been introduced to remove spilt solutes. The space between the inner and outer bags had never been claimed sterile and a notice to that effect and a caution that all solutions for peritonial dialysis now appeared on all Dialoflex and Steriflex products. (B.M.J. March 11, pp. 606 and 628).

ORCIPRENALINE (Alupent) is suggested as a possible treatment for patients who have suffered side-effects from blockade of adrenergic β-receptors by workers at Imperial Chemical Industries, Ltd., and Queen's University, Belfast. Comparison of the effect of intravenous injections of isoprenaline and orciprenaline heart rate in cats, heart rate and contractile force in dogs and heart rate and forearm bloodflow in man showed isoprenaline to be about forty times more active in cats, ten to twenty times more active in dogs and ten to 40 times more active in humans. (*B.M.J.* March 11, p. 610).

NEW COMPANIES

P.C. = Private Company. R.O. = Registered Office.

A. H. NEWSON, LTD. (P.C.). — Capital £100. To carry on the business of dispensing chemists, etc. Directors: Alfred H. Newson and Audrey I. Newson, 368 Derelam Road, Norwich.

PRENTENN (CHEMISTS), LTD. (P.C.).—Capital £100. To carry on the business of manufacturers of and dealers in chemicals, drugs, wholesale and retail chemists and druggists, etc. Directors: Lester C. Turnpenny, M.P.S., and Lester J. Turnpenny, M.P.S. R.O.: 111 County Road, Liverpool, 4.

RAVIL COSMETIC & PHARMACEUTICAL PRODUCTS LTD. (P.C.) — Capital £100. Directors: Herbert J. Yates, and Eva M. Oliver, R.O.: 82 Leafenden Avenue, Chasetown, Nr. Walsall.

SURGICAL MEDICAL LABORATORY CO., LTD. (P.C.).—Capital £1,000. Directors: Derek E. Zundel, Derek W. Capon and Albert R. Gravina. R.O.: Northway House, High Road, London, N.20.

TANATEX CHEMICAL CO. LTD. (P.C.) — Capital £5,000. Subscribers: Michael N. Richardson and Gordon A. Yablon. Solicitors: Jaques & Co., 2 South Square, London, W.C.1.

VIRGO CHEMICALS, LTD. (P.C.). — Capital £100. To carry on the business of importers of chemicals, etc. Subscribers: S. H. Davis and D. Ordish. R.O.: 40 Lyndon Avenue, Hatch End, Middlesex.

WOODS CHEMICALS, LTD. (P.C.) — Capital £100. To carry on the business of advisers, and packaging experts to the chemical and cosmetic industries, etc. Subscribers: Horace G. Hafford and Marion E. Nattall. R.O.: 79 Marlowes, Hemel Hempstead, Herts.

COMMERCIAL TELEVISION

The information given in the table is of number of appearances and total screen time in seconds. Thus 7/105 means that the advertiser's announcement will, during the week covered, be screened seven times and for a total of 105 seconds.

Period—March 26-April 1

PRODUCT	London	Midland	North	Scotland	Wales & West	South	North-east	Anglia	Ulster	Westward	Border	Grampian	Eireann	Channel Is.
Alka-Seltzer	—	—	—	—	3/90	—	—	—	—	—	—	—	—	—
Anadin...	4/120	4/74	2/60	3/90	3/90	3/90	2/60	2/60	3/90	2/60	2/60	3/90	—	2/60
Andrews liver salt	—	—	—	—	—	—	—	—	—	—	—	—	1/15	—
Anne French preparations ...	2/60	—	1/30	—	1/40	1/30	—	2/60	—	—	—	—	—	—
Askit powders and tablets ...	—	—	—	7/49	—	—	—	—	—	—	3/21	2/14	—	—
Bisodol	—	1/7	—	—	—	—	—	—	—	—	—	—	—	—
Coldrex	—	—	—	—	—	—	—	—	—	—	—	—	1/15	—
Dettol	1/45	—	—	—	—	—	—	—	—	—	—	—	—	—
Disprin	—	—	—	2/30	1/15	1/30	1/30	—	—	—	1/15	—	—	—
Dentu-Creme	2/60	—	—	2/30	2/30	2/60	2/30	3/90	2/30	3/45	2/30	2/30	—	2/30
Fennings gripe mixture ...	—	—	2/14	—	—	—	—	—	—	—	—	—	—	—
Horlicks	—	—	—	—	—	—	—	—	—	—	—	—	—	4/120
Imperial Leather soap ...	1/15	1/15	1/15	—	1/15	1/15	1/15	1/15	2/30	3/60	1/15	2/45	—	—
Milk of Magnesia	1/15	1/15	1/15	1/15	2/30	1/15	1/15	1/15	2/30	2/30	4/60	3/45	—	1/15
Milpar	—	—	—	—	2/60	—	—	—	—	—	—	—	—	—
Nulon	1/30	1/30	1/30	1/30	1/30	1/30	—	—	1/30	1/30	—	2/60	—	1/30
Ostermilk and Farex ...	—	—	—	—	6/180	—	—	—	—	3/90	—	—	—	—
Powerin	—	1/7	—	—	—	—	—	—	—	—	—	—	—	—
Steradent	—	2/60	1/30	—	1/30	—	—	1/30	1/30	1/30	—	1/30	—	1/30

March 18, 1967

mulative price changes

AMENDING C & D QUARTERLY PRICE LIST FOR MARCH 1967

	coline (49 AF)				
	mpoules 0·1 gm	8	64 0	—	7 2
	nar (61 APC) †s4B				
	ntravenous	45iu	84 0	—	—
	ortyl-A (1176 Squibb)				
	ntramuscular (vet.) 100gm & 1gm				
	amycin GU (1263 Upjohn) †s4B				
	ablets	30	32 2ea	—	—
		100	104 6ea	—	—
	n-Ex (760 Liga) existing entry				
	in-Ex (760 Liga)				
	ow protein biscuits				
		5oz	21 0	—	2 3
	pax (1053 Rexall)				
	old tablets *delete* †				
	ough pastilles *insert* †				
	asal spray *delete* †				
	bacsyn (52 Antibody)				
	isol (11 Aerosmoke)				
	distributors 1518 Tillner)				
	. 37 (52 Antibody)				
	l (333 Cupal) existing entry				
	al (333 Cupal)				
	r fresheners				
	bouquet blocks		11 1	—	1 3
	cedar blocks		22 0	—	2 6
	unior blocks		6 11	—	9
	rainbow blocks		18 10	—	2 0
	r freshener aerosols				
	Apple Blossom				
	super size		37 4	—	3 11
	aribbean Night				
	popular size		32 5	—	3 3
	agnolia Blossom				
	household size		29 2	—	2 11
	super size		37 4	—	3 11
	ose Petal				
	household size		29 2	—	2 11
	super size		37 4	—	3 11
	ouch of Spring				
	super size		37 4	—	3 11
	bble pack blocks				
	pple blossom,				
	arnation, lavender				
	oth repellent,				
	agnolia blossom,				
	ose petal, toilet		13 10	—	1 6
	ar air freshener		16 0	—	1 9
	nson (76 Atkinson)				
	lish lavender				
		2oz	71 3	19 1	10 6
		4oz	132 4	35 6	19 6
		7oz	203 6	54 7	30 0
		14oz	390 0	104 7	57 6
		28oz	746 0	200 0	110 0
	gel (1281 Vincent)				
	tributors 1054 R&A)				
		tube	31 4	8 7	4 6
	-Phages (49 AF)				
	poules				
	oli-phage	5mils	143 0	—	15 11
	ntesti-phage				
		5mils	143 0	39 4	19 3
	ino-phage	4mils	143 0	39 4	19 3
	Aid (672 Johnson) existing entry				
	Aid (672 Johnson)				
	stic plasters				
	allets		8 6	—	1 0
	edium assorted		21 3	—	2 6
	in × 1yd strip		21 3	—	2 6
	in × 1yd strip		29 6	—	3 6
	in × 6in strip		4 3	—	6
	er plasters		21 3	—	2 6
	shproof plasters				
	allets		8 6	—	1 0
	all assorted				
		carton	12 9	—	1 6
	edium assorted				
		tin	21 3	—	2 6
	rge assorted	tin	29 9	—	3 6
	edium strips	tin	21 3	—	2 6
	ge strips	tin	29 9	—	3 6
	n × ¾in	100	91 0	—	11 4½
	n × 1in	100	112 0	—	14 0
	dia.	100	78 0	—	9 9
	in × 1½in	100	106 0	—	13 3
	n × 4½in	5	21 3	—	2 6
		50	224 0	—	28 0
	tterfly closure				
		100	72 0	—	9 0

	Belmag (713 KH)				
	Ideal quartz lamp				
		511.136	442 6ea	—	590 0
	Benoxyl (1191 Stiefel)				
	lotion plain	30mils	60 0	16 6	8 11
	regular	30mils	62 0	17 0	9 2
	strong	30mils	66 0	18 2	9 9
I	**Bounce** (481 F & S)				
	hair set	tube	35 2	9 8	5 6
D	Bourn-Vita (216 Cadbury) existing entry				
I	**Bourn-Vita** (216 Cadbury)				
		¼lb	15 10½	—	1 8
		½lb	28 6	—	3 0
		1lb	54 8	—	5 9
D	British bee venom (52 Antibody) all packs				
D	British grass pollen (52 Antibody)				
D	Bromodyne (745 Legat)				
	Cadbury (216 (Cadbury)				
	diabetic chocolate				
	plain	¼lb.	18 0	2 8½	1 11
	almond	¼lb.	21 10	3 3	2 4
D	assorted		—	—	—
	Cadum (280 CP) 5 pack minimum order				
	soap continental				
	toilet		18 10 (2doz)	5 2 (2doz)	1 2
	bath		29 7	8 1	1 10
	Carbellon (830 Medo)				
D	500 pack				
D	Check (1533 Check) existing entry				
I	**Check** (532 Goya)				
	deodorant				
	aerosol	110gm	44 1	11 9¾	6 6
	puffer	34cc	28 10	7 8¾	4 3
	roll-on	50cc	37 3	9 11¾	5 6
	Chix (672 Johnson)				
	disposable nappy				
	liners		14 0	—	1 9
	Colorfast (265 Clairol)				
	shampoo	sachet	20 3 (3 doz.)	5 7 (3 doz.)	3 0
	Compericum (1261 Ucal)				
		4oz	44 0	12 1	6 2
		8oz	75 0	20 7½	10 9
		80oz	42 0ea	11 6½	—
	Condition (265 Clairol)				
	hair conditioner				
		tube	37 0	10 2	5 6
	Co-tabs (311 C)				
	P.10 paracetam				
	500mgm	100	38 6	—	—
		250	6 8ea	—	—
		1000	24 0ea	—	—
	P.32 penicillin V				
	250mgm TS	100	318 0	—	—
	Coty (301 Coty)				
	eye shadow powder				
	evening shades		61 0	16 3	9 0
	hand care cream				
		296	35 6	9 6	5 3
D	hand treatment cream		—	—	—
	Cow and Gate (307 C & G)				
D	humanised milk food 20 oz.				
	Crest Naturac (1203 Surex)				
	protectives		72 0 (1 gross)	—	3 9
	Crookes (324 Crookes)				
	hand cream	50gm	24 0	6 7	3 7
		114gm	48 0	13 3	7 1½
D		28gm	—	—	—
	Day's (358 D&S)				
	Black Drink	2½oz	39 4	13 7	6 3
	Driffield oils	10oz	68 11	23 2	10 9
		20oz	131 1	44 5	20 6
	Etheric ammonia				
		8oz	55 9	18 11	8 9
	Red Drink	7lb	24 0ea	8 4ea	46 0
		14lb	47 0ea	15 10ea	88 0
		28lb	88 7ea	29 11ea	166 0
	White oils	10oz	68 11	23 2	10 9
		20oz	131 1	44 5	20 6
	Declinax (1074 Roche)				
	tablets 10mgm	100	16 8ea		25 0
		500	68 0ea		102 0
	20mgm	100	24 0ea		36 0
		500	98 8ea		148 0
	Dee Gee (542 Griffin)				
	spare lamp		18 9	5 0	2 6
	Diajubes (588 H&H)		14 8	—	1 10½

	Dimyril (1530 Fisons)				
	capsules	20	38 0	—	4 9
	Diovol (1 441 Wallace)				
	tablets	50	5 6ea	1 6ea	9 9
		250	24 6ea	6 10ea	43 7
	Dippity-do (1242 Toni)				
	hairspray		34 2½	9 5	4 11
	Donnagel P.G. (1071 Robins) †DD1				
	suspension	6 oz	82 0	—	10 3
	Endocil (917 Organon)				
	Sun-care lotion				
		110gm	64 2	17 8	9 6
	Envacar (969 Pfizer)				
	tablets 10mgm	100	39 7ea	—	59 5
		500	192 0ea	—	288 0
	40mgm	100	148 6ea	—	222 9
		500	720 3ea	—	1080 5
I	Ethiazide (830 Medo)				
	tablets	100	9 0ea	—	13 6
		250	21 0ea	—	31 6
		500	41 0ea	—	61 6
	Extil (394DF) †s7				
	linctus	5oz	60 0	—	7 6
	Fairlie (672 Johnson)				
D	cotton wool 2oz. and 8oz.				
	Fame (Corday (813 MF))				
	talcum		100 0	23 9	14 8
	Faringets (97 Bayer)				
	lozenges	20	26 0	—	3 3
	Febrilix (147 Boots)				
	elixir	60mils	20 0	—	2 6
	Ferroids (1061 Riker)				
	tablets	100	76 0	—	9 6
		1000	49 0ea	—	73 6
	Ferrol (573 JH) †				
	compound		58 0	15 11½	8 6
			115 0	31 7½	16 9
	Folaemin (1061 Riker)				
	tablets	100	80 0	—	10 0
	Gala (876 MP)				
	nail colour pearl				
		1036	52 5	14 5	7 9
D	Gamgee (1073 Robinson) existing entry				
I	**Gamgee** (1073 Robinson)				
	tissue blue label				
	B.P.C.	2oz	13 0	—	1 5½
		4oz	23 3	—	2 7
		8oz	43 3	—	4 10
		16oz	81 6	—	9 1
	pink label NHS No. 3				
		2oz	11 2	—	1 3
		4oz	19 6	—	2 2
		8oz	35 9	—	4 0
		16oz	66 6	—	7 5
	Glycinello (664 JS & C)				
	hand cream tin				
		28gm	13 4	3 8	2 0
	Go (994 P & M)				
	aerosol perfumed				
		7757	44 0	12 1	6 3
	roll-on	7751	30 0	8 3	4 6
	spray perfumed				
		7752	23 8	6 6	3 6
	stick	7747	16 11	4 8	2 6
		7748	27 0	7 5	4 0
	perfumed	7749	18 7	5 1½	2 9
	talcum powder				
		7756	37 2	10 3	5 6
	Gonadotraphon (930 P & B) †s4B				
	L.H. ampoules				
	12,000iu	1	30 0ea	—	45 0
D		3	—	—	—
I	**Goya** (532 Goya)				
	lipsheen		37 3	9 11¾	5 6
	talcum luxury				
		100gm	33 11	9 1	5 0
	Cedar Wood				
	shaving bowl refill				
		3½oz	37 3	9 11¾	5 6
	after shave decanter				
		158cc	79 8	21 4½	11 9
	lather shave	80gm	27 1	7 3	4 0
	pre-shave decanter				
		158cc	79 8	21 4½	11 9
	Timeless				
	Cologne luxury size				
		170cc	113 8	30 5½	16 9

the most versatile digitalis glycoside

LANOXIN brand DIGOXIN

TABLETS • SOLUTION • INJECTION • PÆDIATRIC ELIXIR

BURROUGHS WELLCOME & CO. (*The Wellcome Foundation Ltd.*) LONDON

	eau de toilette	25cc	72 11	19 6½	10 9
D	deodorant aerosol		—	—	—
D	eye shadowmatic		—	—	—
	Cedar Wood				
D	shaving bowl	3¼oz	—	—	—
D	refill	3¼oz	—	—	—
	Heath & Heather (588 H&H)				
	cider vinegar	10oz	28 0	—	*3 6*
		40oz	88 0	—	*9 9*
	extract of rosemary		20 6	5 6	2 *11½*
	home brewed beer pack		18 0	2 11½	2 6
	honey				
	Special Blend (clear or set)	1lb	39 0	—	*4 3*
	Lime Blossom—Roumania (clear)	1lb	38 0	—	*4* 0
		7lb	19 6ea	—	24 0
	Orange—Spain (set)	1lb	35 0	—	*3 8*
		7lb	18 6ea	—	*23 0*
	Clover—New Zealand (set)	1lb	38 0	—	*4 0*
		7lb	19 6ea	—	24 0
	Golden—Mexican (set)	1lb	32 0	—	*3* 6
		7lb	16 6ea	—	22 0
	Hymetius (clear)	1lb	56 0	—	*6* 0
		7lb	32 0ea	—	*40* 0
	Lemon—Greece (clear)	1lb	56 0	—	6 0
		7lb	32 0ea	—	*40* 0
	French Heather (clear)	1lb	61 0	—	6 6
		7lb	34 6ea	—	43 0
	Floral—Canada (set)	1lb	35 0	—	*3* 8
		7lb	18 6ea	—	*23 0*
	Everyday—Guatamala (clear)	1lb	35 0	—	*3 8*
		7lb	18 6ea	—	23 0
	Acacia—Roumania (clear)	1lb	35 0	—	*3 8*
		7lb	18 6ea	—	23 0
	molasses		31 6	—	*3* 6
	pot pourri talcum		23 6	6 6	*3* 6½
	skimmed milk granules		20 0	—	2 *3*
	toothpaste azulene		32 3	9 6	4 6
D	brilliantine liquid & solid		—	—	—
D	dandelion coffee	1lb	—	—	—
D	toothpaste herbal		—	—	—
	H.E.B. (589 HEB)				
	pix. carb. 1%, 2% or 3%	2½oz	36 0	—	—
		10oz	120 0	—	—
		22oz	15 6ea	—	—
		5lb	50 0ea	—	—
		7lb	65 0ea	—	—
	Hexopal (97 Bayer)				
	tablets 200mgm	40	89 0	—	**11 2**
		250	39 10ea	—	**59 10**
		1000	144 4ea	—	**216 7**
	500mgm	100	39 3ea	—	**58 11**
		500	194 7ea	—	**291 11**
	Ilford (645 Ilford)				
	paper Ilfobrom single weight				
	2½×3½	100	4 6ea	1 3ea	**8 0**
	3½×3½	100	5 10ea	1 8ea	**10 5**
	3½×4½	100	7 0ea	1 11ea	**12 5**
		250	16 10ea	4 8ea	**29 11**
	3½×5	100	7 8ea	2 1ea	**13 7**
	3½×5½	25	2 8ea	9ea	**4 9**
		100	8 4ea	2 4ea	**14 10**
		250	20 2ea	5 7ea	**35 10**
	4¾×6½	25	3 10ea	1 1ea	**6 10**
		100	12 8ea	3 6ea	**22 6**
		250	30 8ea	8 5ea	**54 5**
	6×8	250	46 0ea	12 1ea	**81 1**
	6½×8½	25	6 4ea	1 9ea	**11 3**
		100	21 10ea	6 0ea	**38 9**
		250	52 10ea	14 7ea	**93 10**
	8×10	10	4 2ea	1 2ea	**7 5**
		100	31 0ea	8 6ea	**55 0**
		250	75 2ea	20 8ea	**133 5**
	8×13	100	40 0ea	11 0ea	**71 0**
	10×11	100	42 2ea	11 7ea	**74 10**
	10×12	10	6 2ea	1 8ea	**10 11**
		100	45 10ea	12 8ea	**81 4**
	12×15	10	9 0ea	2 6ea	**16 0**
		100	68 4ea	18 9ea	**121 4**
	16×20	10	15 6ea	4 4ea	**27 7**
		100	120 6ea	33 2ea	**213 11**
	20×24	10	23 2ea	6 5ea	**41 2**
		100	180 0ea	49 6ea	**319 6**
	double weight				
	2½×3½	100	5 2ea	1 5ea	**9 2**
	3½×4½	100	8 2ea	2 3ea	**14 7**
		250	19 8ea	5 5ea	**34 11**
	3½×5	25	2 10ea	10ea	**5 1**
		100	9 0ea	2 6ea	**16 0**
	3½×5½	25	3 0ea	10ea	**5 4**
		100	9 10ea	2 8ea	**17 5**
		250	23 10ea	6 7ea	**42 4**
	4¾×6½	25	4 4ea	1 2ea	**7 8**
		100	15 0ea	4 2ea	**26 8**
		250	36 4ea	10 0ea	**64 6**
	6×8	250	54 10ea	15 1ea	**97 4**
	6½×8½	25	7 4ea	2 0ea	**13 0**
		100	25 10ea	7 1ea	**45 10**
		250	62 6ea	17 3ea	**111 0**
	8×10	10	4 10ea	1 4ea	**8 7**
		100	37 10ea	10 2ea	**65 8**
		250	89 8ea	24 8ea	**159 2**
	10×12	10	7 0ea	1 11ea	**12 5**
		100	54 10ea	15 1ea	**97 4**
	12×15	10	10 4ea	2 10ea	**18 4**
		100	81 8ea	22 6ea	**145 0**
	16×20	10	18 0ea	4 11ea	**31 11**
		100	144 4ea	39 8ea	**256 2**
	20×24	10	26 8ea	7 2ea	**47 2**
		100	216 0ea	59 5ea	**383 5**
	Insidon (501 Geigy) †s4B				
	tablets 50mgm	30	7 3ea	—	**10 10½**
		150	30 0ea	—	**45 0**
		1000	186 3ea	—	**279 4½**
D	Irogel (358 D&S)				
I	Irojel (358 D&S)				
	Isomat-Rapid (16 AGL)				
I	camera outfit		—	—	**382 6**
	camera C		—	—	**379 6**
	Iso-Rapid (16 AGL)				
	camera 1C outfit		—	—	**108 6**
	It's Magic (333 Cupal)				
	spot lifter		47 6	—	**4 11**
I	**Johnsons** (672 Johnson)				
	cellulose wadding B.P.C.	16oz	30 0	—	*3 3*
	dressing pack sterilised		16 0	—	—
	gauze and cotton tissue				
	B.P.C.	16oz	81 6	—	9 0
	Drug Tariff	16oz	66 6	—	7 4
	incontinence pads	12	78 0	—	9 6
	protective pants interliners	12	67 0	—	7 6
D	absorbent underpads		—	—	—
D	chiropodist's felt N.H.S.		—	—	—
D	cotton wool B.P.C. ½oz, 2oz, 8oz		—	—	—
D	sterilised ½oz		—	—	—
D	lint B.P.C. ½oz, 2oz, 8oz		—	—	—
D	pleated wool		—	—	—
I	**Kee** (1000 PPL)				
	nylon whitener	standard	36 5 (2 doz.)	—	*1 10*
		double	63 2 (2 doz.)	—	*3* 2
I	**Kodak** (711 Kodak)				
	black and white roll films per 100 rolls				
	Verichrome Pan				
	127, 120, 620		224 7	61 9	*3 10*
		126	265 5	73 0	4 6
		116	291 8	80 3	*5* 0
		828	210 0	57 9	*3* 7
	Panatomic-X	120	224 7	61 9	*3 10*
	Tri-X Pan 127, 120, 620		250 10	69 0	4 *3*
	Royal-X Pan	120	291 8	80 3	*5* 0
	black and white miniature film				
	Plus-X Pan	135-20	362 6	99 8	*5 10*
		135-36	465 8	128 1	7 6
		935	275 0	75 8	4 *5*
		5 metres	737 6	202 10	*11 10*
		17metres	2206 3	606 9	*35* 6
	Tri-X Pan	135-20	362 6	99 8	*5 10*
		135-36	465 8	128 1	7 6
		935	275 0	75 8	4 *5*
		17metres	2206 3	606 9	*35* 6
	Panatomic-X				
		135-36	465 8	128 1	7 6
		935	275 0	75 8	4 *5*
		17metres	2206 3	606 9	*35* 6
	Lady Jayne (735 Laughton)				
	heat rollers	(4)	63 9	17 6½	9 *11*
		(8)	125 6	34 6	*19* 6
I	**Liga** (760 Liga)				
	3-way food	4½oz	12 0	—	**1 3**
	gluten free biscuits	6½oz	21 0	—	**2 3**
	Li-lo (308 Cow)				
	hot water bottles				
	Jug		45 6	—	—
	Sheerline		74 0	—	—
	Linc-o-lin (657 IL)				
	shampoo beer	barrel	18 10	5 2	**2 10**
D		tube	—	—	—
D	Litesome (1581 Litesome) existing entry				
I	**Litesome** (1581 Litesome)				
	athletic slip		51 8	5 3	6 *11*
	cricket guard		34 0	8 9	*5* 0
	cushioned		71 5	18 8	*10* 6
	supporters				
	BIF		51 6	5 3	6 9
	BIF. 10		56 1	5 10	7 6
	cricket		64 9	6 9	*8 8*
	standard		57 3	6 0	7 *8*
	nylon		79 8	8 4	*10 8*
	Mayfair		125 2	13 1	*16* 9
	Royale		190 6	19 11	*25* 6
	spare pouch		41 2	4 4	*5* 6
	swim		42 4	4 5	*5 8*
	supports				
	anklet lastex				
	lightweight		44 0	—	*5* 6
	heavy type		32 0	—	4 0
	elbow lastex		28 0	—	*3* 6
	knee cap lastex				
	lightweight		48 0	—	6 0
	heavy type		32 0	—	4 0
	lastex felt padded		64 8	16 11	
	flat padded		57 10	15 1	
D	Magnogene (115 Bengue) all items				
	Marzine (208 BW) †s7				
	tablets 50mgm		27 0	—	
	Maws (810 Maw)				
	baby pants Tufty		24 6	—	
	Tufty Tails pads				
	newborn	(12)	22 4	—	
	standard	(12)	24 0	—	
		(25)	47 2	—	
	Simpla brush		12 0	—	
	feeding bottle & teat		32 5	—	
	jug		64 0	7 0	
	spatula		9 4	1 0	
	teat		8 5	—	
	Maxolon (1393 BRL)				
	ampoules 2 mils	10	11 8ea	3 2ea	
	syrup	100mils	8 6ea	2 4ea	
	tablets	20	10 0ea	2 9ea	
	Mediject (615 H & M) †s4B				
	injection (vet.)				
	100 mils		54 0	—	
	500 mils		156 0	—	
	Meltus (333 Cupal)				
	junior cough mixture	6oz	31 6	7 9	
D	Milprem 200 (1441 Wallace)				
D	Milprem 400 (1441 Wallace)				
D	Miltrate (1441 Wallace)				
D	Miluretic (1441 Wallace)				
D	Mimospray (347 Dalmas)				
I	**Mimospray** (1413 P & S)				
	Miners (876 MP)				
	hair lacquer spray refill sachet	3084	6 9	1 10¼	
D	Miocarpine (451 F&J)				
I	**Miocarpine** (930 P&B)				
	Murphy (871 MCC)				
I	rose bed weedkiller sachets	5	30 0	—	
		10	56 0	—	
	Neo-Medrone (1263 Upjohn) TS				
	acne lotion 25mils		10 3ea	—	
	Neomycin (1176 Squibb)				
D	sulphate powder 5gm				
D	Neron (1274 VDL)				
	Nevasic (1261 Ucal)				
	travel sickness tablets		11 6	3 2	
	Nilevar (1121 Searle) †s4B				
	tablets 10mgm	25	33 10ea	—	
		250	299 6ea	—	
	Optima (16 AGL)				
	cameras				
	Rapid 125		—	—	
	Rapid 500		—	—	
	Oxatets (311 C) TS				
	capsules	100	30 0ea	—	
		1000	288 0ea	—	
	tablets	100	30 0ea	—	
		1000	288 0ea	—	
D	Oxo (926 Oxo) existing entry				
I	**Oxo** (926 Oxo)				
	liquid	2oz	21 6	—	
		4oz	39 8	—	
		8oz	69 3	—	
		16oz	126 5	—	
	Paroven (1493 Zyma)				
	tablets	20	14 0ea	3 10½ea	
		100	60 0ea	16 6ea	
	Paxidorm (1301 WM) †s4B				
	tablets	50	7 6ea	—	
	Penbritin (1393 BRL) TS				
	capsules 250mgm	20	22 9ea	—	
		100	109 6ea	—	
		500	529 6ea	—	
	500mgm	20	43 9ea	—	
		100	210 0ea	—	
	injection				
	100mgm	vial	2 5ea	—	
	250mgm	vial	4 1ea	—	
	500mgm	vial	6 7ea	—	
	syrup 125mgm/5mils	60mils	9 8ea	—	
	forte	60mils	18 0ea	—	
	tablets 125mgm	20	13 6ea	—	
		100	62 6ea	—	
	Penbritin K.S. (1393 BRL) †s4B				
	powder for suspension	60mils	8 9ea	—	
	Philishave (977 PE)				
	shaver Traveller cordless		72 1ea	19 5ea	
	Phospho-soda (49AF)	6oz	65 0	17 10½	
I	**Photopia** (980 Photopia)				
	binoculars	7×35	—	—	
		7×50	—	—	
		8×30	—	—	
		8×40	—	—	
		10×50	—	—	
		12×50	—	—	
		16×50	—	—	
		20×50	—	—	
		7×35w/a	—	—	
		8×40w/a	—	—	
	Physeptone (208 BW) †s1DD				
	injection 10mgm/mil	5	2 6ea	—	
D		10	—	—	
	Pinoletta (1030 Ravika)				
	bubble bath	1lb	60 0	17 0	

1565 P. Plus)				
eflash		—	—	*24 10*
ylan (1320 WSP)				
m	45gm	66 0	18 0	9 9
sion (Corday (813 MF))				
um		100 0	23 9	**14 8**
ra (1263 Upjohn) †s4B				
lets				
0mgm	100	282 4ea	—	—
(67 Ashe)				
(1052 Revlon)				
blushers	0319	62 6	17 2	**9 6**
Guard (514 Gillette)				
dorant aerosol				
	2½oz	41 3	11 4	*5 9*
ary (588 H&H) existing entry				
ary (588 H&H)				
npoo	sachet	5 3	1 5	9
ttle	2oz	16 6	4 6	2 6½
	6oz	46 10	13 0	*7 1*
	16oz	99 5	28 0	*15 2*
(444 FAIR)				
ets	40	58 0	16 0	*8 2*
	120	168 0	46 0	*22 9*
	dp 360	41 0ea	—	—
	dp 720	77 0ea	—	—
1418 Strenol)				
worm remedy (vet.)				
(1091 Rybar) †				
ar co. tablets	25	48 0	13 2	7 1
	100	14 0ea	3 10ea	**24 10**
(588 H&H)				
al cigarettes	20	21 6	—	2 6
(1054 R & A)				
r kit	Y100	44 0	12 1	6 6
33 Cupal) existing entry				
333 Cupal)				
sols				
killer				
usehold size		41 0	—	4 3
ing insect repellent				
pular size		44 3	11 0	5 6
al fly killer				
per size		37 4	—	3 11
usehold size		32 5	—	3 3
thproofer				
usehold size		41 0	—	4 3
erfast fly killer				
per size		41 0	—	4 3
nt size		75 0	—	7 6
p killer				
usehold size		41 0	—	4 3
ds				
sect plant food		13 10	—	1 6
.T.	8oz	23 6	—	2 6
	16oz	35 10	—	3 11
	32oz	57 6	—	6 3
erican)	128oz	155 0	—	17 6
emulsion		16 0	4 0	2 3
ticide powder				
tic puffer	4oz	17 6	—	1 11
	7oz	26 8	—	2 11
	1 lb	35 0	—	3 11
killer	4oz	17 6	—	1 11
le louse powder				
	1 lb	35 0	—	3 11
Kil (333 Cupal)				
tablets	150			
trene (871 MCC)				
3		21 8ea	—	*32 6*
101 Sangers)				
h spray aerosol		55 9	15 4	*7 11*
ex (1203 Surex) existing entry				

I	**Silver-Tex** (1203 Surex)				
	protectives		60 0 (1gross)	—	2 6
	Simbix (173 Britanol)				
	nibbles puff crackers		26 3	—	**2 11**
	sweetmeal digestive		22 6	—	**2 6**
D	wheatmeal digestive		—	—	—
D	SMP (451 F&J)				
I	**SMP** (930 P&B)				
	Sofra-Tulle (1087 Roussel) T5				
	dressings 4×4in	10	56 0	—	7 0
	strip 4×40in		56 0	—	7 0
	Sombrero (1532 Care)				
D	aerosol spray				
D	Sonki II (713 KH) existing entry				
I	**Sonki II** (713 KH)				
	health lamp with timer		147 0ea	—	*210 0*
I	**Sonki III** (713 KH)				
	health lamp with timer		161 8ea	—	*231 0*
	Spray Tan (47 Anestan)				
	original lanolin or extra soft		66 4	18 3	9 9
	Strike (818 M&B)				
	rooting powder		30 0	—	*3 9*
	Tabloid (208 BW)				
D	three bromides	12			
	Tephamine (1091 Rybar) †				
	mixture	4oz	45 0	12 5	6 8
	Thibenzole (837 MSD)				
I	autodrencher with priming cartridge		132 9ea	—	**177 0**
	liquid cartridge	720cc	76 6ea	—	**102 0**
	Thionaiodine-V (49AF)				
	tablets	40	62 0	17 1	*8 5*
	Thyropit (830 Medo)				
D	500 pack				
	Toniron (830 Medo)				
D	500 pack				
	Tonivitan (830 Medo)				
D	capsules 500				
	Toujours Moi (Corday (813 MF))				
	talcum		100 0	23 9	**14 8**
	Trasylol (452FBA)				
	ampoules 100,000 k.i.u. 10mils	5	567 0ea	—	**850 6**
	Trihextin (409 EH)				
	capsules	80	148 0	—	**17 6**
	Trinitrine Cafeinee (49 AF) †s7				
	pills	60	45 0	12 4½	6 *1*
	Trinitrine Papaverine (49 AF) †s1				
	pills	60	73 0	20 1	9 *11*
	Triptafen-DA (34 A&H) †s4B				
I	suspension	5oz	7 6ea	—	**11 3**
		500mils	25 0ea	—	**37 6**
	forte suspension	5oz	8 9ea	—	**13 2**
		500mils	28 11ea	—	**43 5**
	Ucal (1261 Ucal)				
	blood purifier	16oz	32 0	8 9½	*4 9*
	bronchial catarrh syrup†	4oz	19 0	5 3	2 *11½*
		8oz	28 0	7 8½	4 *6½*
I	chillie paste	2oz	19 0	5 3	*3 0*
	nursery powder	100gm	15 0	4 1½	2 3½
	peppermint oil solution	1oz	14 6	—	2 *1*
D	baby cream	4oz	—	—	—
D	borated zinc and starch nursery powder				
	Uraseptine (49 AF)				
	granules	80gm	67 0	18 5	9 *1*
	Valopto (343 DH)		19 2	5 3½	**2 9**
D	Vasocidin (451 F&J)				
I	**Vasocidin** (930 P&B)				
D	Vasocidin-D (451 F&J)				
I	**Vasocidin-D** (930 P&B)				
D	Vasodex (451 F&J)				
I	**Vasodex** (930 P&B)				
D	Vasozinc (451 F&J)				
I	**Vasozinc** (930 P&B)				
	Vatensol (583 HP)				
	tablets 10mgm	100	25 0ea	—	*37 6*
	40mgm	100	93 9ea	—	*140 8*
	Vax (191 BVF)				
D	vacuum jug Standard G69				
D	Grecian J70				
D	refill R231				
D	Seal-a-Vac stoppers VA131/125				
	Vitavel A (1285 Vitamins)				
D	capsules 25				
D	Warmabed (1308 Warmabed) existing entry				
I	**Warmabed** (1308 Warmabed)				
	De Luxe electric blankets				
	single	60×30	—	—	*122 6*
	double	60×48	—	—	*170 4*
	dual control	60×48	—	—	*215 1*
	three heat single	60×30	—	—	*150 8*
	double	60×48	—	—	*239 7*
	five step control unit		—	—	63 *0*
	table lamp model		—	—	77 6
	Waxsol (896 NL)				
	ear drops	16mils	42 0	—	**5 3**
	Wellcome (208 BW)				
D	semen diluent (vet.)				
	Winlam (615 H & M)		48 0	13 3	7 *1½*
	Wotan (13 AEG)				
	health lamps Theratherm		—	—	**33 6**
	Ultravitalux GUR53		—	—	**98 6**
	Zobec (672 Johnson)				
	gauze swabs 2×2in	100	33 0	—	—
	3×3in	100	57 9	—	—
	4×4in	100	101 0	—	—
	Zymafluor (1493 Zyma)				
I	tablets	150	24 0	7 0	**3 7**

AMENDMENTS TO KEY TO SUPPLIERS

13 AEG=**AEG (Great Britain), Ltd.,** 27 Chancery Lane, London, W.C.2. 01-242-9944.

160 Bliss=**Bradley & Bliss, Ltd.,** Kings Road, Reading. Reading 40303.

576 PH=**Philip Harris Medical, Ltd.,** Hazelwell Lane, Stirchley, Birmingham, 30. 021-458-2020.

1105 Sarakan=**Sarakan Products, Ltd.,** 43 Sunningdale Avenue, Leigh-on-Sea, Essex. Southend 74719.

1234 TCP=**Tidebrook Chemical Products, Ltd.,** P.O. Box 413, 19 Grange Road, London, S.E.1. Bermondsey 4525.

1347 WB=**Wood, Bastow (Elastics), Ltd.,** Victoria Road, Pinxton, Notts. Pinxton 508.

1378 CD=**C. D. Indicators,** 31 Queen Anne's Gate, London, S.W.1. Whitehall 9711.

1546 Sheranel=**Sheranel, Ltd.,** Rodley, Leeds, Yorks. Pudsey 76683.

Furan lowest cost Nitrofurantoin BP
50mg tablets 23/- per 50
100mg tablets 43/- per 50 Basic NHS prices
Chelsea Drug & Chemical Company Limited 310 Old Brompton Road London SW5

THIS WEEK'S CHANGES

Prices are given in the sequence Trade Price per Doz.; Purchase Tax per Doz.; Retail Price. Bold upright figures (**2 9**) in the retail price column indicate that the price is subject to resale price maintenance; italic figures (*2 9*) that it is recommended by the manufacturers; and light upright figures (2 9) that it is "notional" as a guide to the retailer in determining his own retail price.

	(930 P & B)†s1				
	lmic solution				
		10mils	5 6ea	—	*8 3*
		10mils	6 3ea	—	*9 5*
		10mils	7 9ea	—	*11 8*
	l (1441 Wallace) †s4B				
	s	100	19 1ea	—	*28 8*
		50	—	—	—
	Piguet (1253 Turnpenny) existing entry)				
	(Piguet (1446 Pearmoss))				
	ne	⅛oz	12 9ea	3 7ea	*22 10*
		¼oz	30 3ea	8 5ea	*54 0*
		½oz	43 2ea	11 11ea	*76 6*
		1oz	61 11ea	17 1ea	*110 0*
		2oz	104 2ea	28 8ea	*184 6*
		4oz	190 9ea	50 0ea	*336 0*
	toilet water	2oz	18 6ea	5 0ea	*32 0*
		4oz	28 0ea	7 9ea	*49 0*
		8oz	44 0ea	11 7ea	*79 0*
		16oz	72 6ea	20 1ea	*129 0*
		32oz	106 0ea	29 2ea	*188 0*
D	Bandit (Piguet (1253 Turnpenny) existing entry)				
I	**Bandit** (Piguet (1446 Pearmoss))				
	perfume	⅛oz	15 0ea	4 2ea	*26 8*
		¼oz	34 4ea	9 5ea	*61 0*
		½oz	57 9ea	15 8ea	*102 6*
		1oz	88 0ea	24 1ea	*174 0*
		2oz	151 9ea	41 10ea	*269 6*
		4oz	267 0ea	73 5ea	*474 0*
	toilet water	2oz	18 6ea	5 0ea	*32 0*
		4oz	28 0ea	7 9ea	*49 0*
		8oz	44 0ea	11 7ea	*79 0*
		16oz	72 6ea	20 1ea	*129 0*
		32oz	106 0ea	29 2ea	*188 0*
	Betnesol (518 Glaxo)				
D	tablets 0·5mgm 500				
D	Bonny Bouncer (436 Evans) see under Cindico				
●	**Chem-Plus** (810 Maw)				
	denture cleanser		18 6	5 1	**2 9**

I	**Cindico** (264 Cindico)				
	Baby Bouncer				
	exercise harness		45 0ea	—	67 6
	Pelican baby's bib		54 0	—	6 9
D	Cravache (Piguet (1253 Turnpenny) existing entry)				
I	**Cravache** (Piguet (1446 Pearmoss))				
	after shave or toilet				
	water for men	202	17 0ea	4 8ea	29 6
		402	27 0ea	7 5ea	*48 0*
		802	39 6ea	11 0ea	70 0
		1602	66 6ea	18 8ea	*118 0*
		3202	103 6ea	27 8ea	*183* 0
	Desert Flower (1131 Shulton)				
C	deodorant spray				
		1838	45 3	12 2	6 11
I	sparkling Cologne				
		1701	72 3	19 4	10 11
	Beauty Ice				
	tube	1977	46 3	12 5	7 1
	jar	1992	84 0	22 6	12 8
	Beauty Clear	1993	70 6	18 11	10 8
	Beauty Clean	1994	70 6	18 11	10 8
	Corn Silk				
	fluid make-up		70 0	18 9	10 8
	Micron face				
	powder	6520	84 0	22 6	12 8
	pressed compact				
		6530	84 0	22 6	12 8
	refill	6533	50 3	13 6	7 8
	Econopen-V (1320 WSP) T5				
R	tablets 125mgm				
		100	12 11ea	—	19 5
I		500	63 7ea	—	—
R	250mgm				
		100	26 8ea	—	40 0
I		500	132 4ea	—	—
	Elsan Blue (418 EM)				
D	symbol †				
I	symbol ‡				
	Elsanol (418 EM)				
D	symbol †				
I	symbol ‡				
	Fentazin (34 A & H) †s4B				
R	syrup	2 litres	45 0ea	—	67 6
D	Fracas (Piguet (1253 Turnpenny) existing entry)				
I	**Fracas** (Piguet (1446 Pearmoss))				
	perfume	⅛oz	12 9ea	3 7ea	22 *10*
		¼oz	30 3ea	8 5ea	*54* 0
		½oz	43 2ea	11 11ea	76 6
		1oz	61 11ea	17 1ea	*110* 0
		2oz	104 2ea	28 8ea	*184* 6
		4oz	190 9ea	50 0ea	*336* 0
	toilet water	2oz	18 6ea	5 0ea	*32* 0
		4oz	28 0ea	7 9ea	*49* 0
		8oz	44 0ea	11 7ea	79 0
		16oz	72 6ea	20 1ea	*129* 0
		32oz	106 0ea	29 2ea	*188 0*
●	**Gold Lace** (794 MHC)				
	tissues		20 0	—	2 6
●	**Gumeze** (372 De Witt)				
			19 9	5 4	2 11
I	**Halex** (560 Halex)				
	hair brushes gents				
	woodgrained finish				
		D117	85 9	23 7	12 6
	ladies brush sets				
	engine turned				
	3-piece	E695	292 0	80 4	23 6
	Harmony 3-piece				
		E658	145 0	39 10	21 6
	4-piece				
		E661	267 9	53 3	37 11
		E665	195 6	53 8	28 11
	5-piece				
		E694	329 3	67 4	45 6
	Princess 4-piece				
		E679	212 6	58 6	31 6
	Prolene combs				
		CC181, CC282, CC383, CC484	—	—	—
●	**Humagel** (938 PD)				
	suspension	150mils	13 2ea	3 7½ea	23 4½
		360mils	30 0ea	8 3ea	53 3
●	**Integrin** (97 Bayer)				
	tablets	250	148 10ea	40 11ea	—
	Jaslyn (1070 Windsor)				
R	soap mammoth				
	ovals	2002	17 6	4 8	2 6
A	**Kifa** (1207 Svedmed)				
	ear plugs		44 0	—	5 6

A = Price Advanced
R = Price reduced
● = New entry
D = Delete
C = Correction
I = Insert

	Memoire Cherie (60 Arden)				
●	handbag hair spray		—	—	10 3
●	**Mini-Drops** (1507 Paton)				
			16 0	4 5	2 4
	Norflex (1061 Riker) †s4B				
R	tablets	100	20 8ea	—	31 0
		500	93 0ea	—	139 6
R	**Norgesic** (1061 Riker) †s4B				
	tablets	100	14 4ea	—	21 6
		500	70 0ea	—	105 0
	N.P.U. (810 Maw)				
●	cleansing cold cream		18 8	5 2	2 9
	Old Spice (1131 Shulton)				
	after shave lotion				
I	lime	3502	54 0	14 6	8 5
C	body talcum	3740	63 9	17 1	9 8
	lime	3540	78 6	21 1	12 2
I	Cologne lime	3522	70 3	18 10	10 11
●	**Ora-jel** (1141 Simpkin)				
			29 3	—	3 6
	Ortho-Novin SQ. (922 Ortho) †s4B				
	Dial Pak	21	70 0	—	8 9
	Panadol (97 Bayer)				
R	tablets	500	22 4ea	—	33 6
		2500	110 6ea	—	165 9
	Paskalium (521 Glenwood)				
A	tablets 0·5gm	1000	62 11ea	—	*83 10*
D	Pelican (264 Cindico)				
	see under Cindico				
	Polycrol (894 Nicholas)				
C	gel	12oz	89 0	22 7	1
D	Pretty Feet (1164 SSL)				
I	**Pretty Feet** (1113 S& B)				
	Quickies (451 F& J)				
●	skin cream		12 11	3 7½	
			20 3	5 7	
R	**Rauwiloid + Veriloid** (1061 Riker) †s4B				
	tablets	100	36 8ea	—	5
		500	175 4ea	—	26
	Regula (980 Photopia)				
●	flash unit variant F5		—	—	35
D	Small Change (1127 Seton)				
C	**Summer Blonde** (265 Clairol)				
	hair lightener		53 0	15 2	
	T.C.P. (1552 UL)				
●	pet antiseptic		16 9	4 7	
R	**Thiaver** (1061 Riker) †s4B				
	tablets	100	38 0ea	—	5
		500	187 4ea	—	28
I	**Tubifoam** (1127 Seton)				
	(distributors 93 BJ)				
	single tubes				
		2032, 2033	1 2ea	—	
		2034, 2035	1 6ea	—	
		2036	1 10ea	—	
C	**Vascutonex** (218 Calmic)				
		30gm	30 0	8 3	
I	**Vasocon-A** (930 P & B) †s7				
	ophthalmic solution				
		15mils	6 6ea	—	9
D	Vasopred (451 F & J)				
I	**Vasopred** (930 P & B) T5				
	ophthalmic solution				
		10mils	6 6 ea	—	9
D	Vasosulph (451 F & J)				
I	**Vasosulph** (930 P & B)				
D	Visa (Piguet (1253 Turnpenny) existing entry)				
I	**Visa** (Piguet (1446 Pearmoss))				
	perfume	⅛oz	12 9ea	3 7ea	22
		¼oz	30 3ea	8 5ea	*54*
		½oz	43 2ea	11 11ea	76
		1oz	61 11ea	17 1ea	*110*
		2oz	104 2ea	28 8ea	*184*
		4oz	190 9ea	50 0ea	336
	toilet water	2oz	18 6ea	5 0ea	*32*
		4oz	28 0ea	7 9ea	49
		8oz	44 0ea	11 7ea	79
		16oz	72 6ea	20 1ea	*129*
		32oz	106 0 ea	29 2ea	*188*
	Windsor (1070 Windsor)				
D	bath crystals	1222			
D	soap luxury	1202			

AMENDMENTS AND ADDITIONS TO KEY TO SUPPLIERS

152 Bovril=**Bovril, Ltd.**, Hyde Park House, 60A Kni bridge, London, S.W.1. Belgravia 2412.

264 Cindico=**Cindico Products, Ltd.**, Albion St Driffield, Yorks. Driffield 3434.

794 MHC=**Mansell Hunt Catty & Co., Ltd.**, C Road, London, N.W.3. Gulliver 3484.

1446 Pearmoss=**Pearmoss, Ltd.**, 81 George St London, W.1. 01-935-6440.

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